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IMPERIAL VALLEY AND TEHACHAPI IMPLEMENTATION GROUPS

PIER FINAL PROJECT REPORT

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Preface

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- Transportation

Imperial Valley and Tehachapi Implementation Groups is the final report for the *Imperial Valley and Tehachapi Implementation Groups* project (Contract Number 500-05-005) conducted by the Center for Energy Efficiency and Renewable Technologies. The information in this report was current as of November 2007. The information from this project contributes to the PIER Renewables Program.

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Abstract

California has adopted policies to expand significantly the use of renewable energy resources for electric generation. Renewable resource areas are often located remote from the existing high voltage transmission system, necessitating construction of major new transmission facilities to interconnect renewable generators and to expand capacity of the existing grid in the region. Here the authors report activities undertaken by the Center for Energy Efficiency and Renewable Technologies to facilitate planning activities for two of California's major renewable energy resource zones.

The Tehachapi Wind Resource Area located east of Bakersfield has generation potential estimated in excess of 4,500 megawatts (MW). The Imperial Valley, centered around the Salton Sea east of San Diego, is believed to have geothermal potential in excess of 2,000 MW in addition to a large solar energy resource.

The authors facilitated a process involving investor-owned and publicly owned utilities, state and federal agencies, and other stakeholders to plan needed transmission facilities and address many related issues. The resulting transmission plans of service to access renewable energy in Tehachapi and Imperial Valley have been approved by the California Independent System Operator, eleven applications for certificates of public convenience and necessity have been approved by the California Public Utilities Commission.

Keywords: Electric transmission, transmission planning, renewable energy, wind power, solar, Tehachapi, Imperial Valley, Sunrise Powerlink, Green Path, CEERT, San Diego Gas & Electric (SDG&E) Southern California Edison (SCE), Pacific Gas and Electric (PG&E), Imperial Irrigation District (IID)

Executive Summary

Introduction

The State of California has adopted policies to increase the use of renewable energy resources for electric generation. These resources, such as wind, solar, and geothermal, are frequently located in remote areas. High voltage electric transmission lines therefore are often required to connect generators in renewable resource areas to the existing grid to move electricity to urban areas where electric energy is needed. To accomplish the state's energy policy goals, substantial investment in new transmission infrastructure is required.

The planning and permitting of high voltage transmission lines is a complex process involving utilities, the California Public Utilities Commission (CPUC), the California Independent System Operator (California ISO), the California Energy Commission, other state and federal agencies, renewable energy developers, environmentalists, and other stakeholders. A high degree of participation and cooperation among the various entities is required for the successful development of large infrastructure projects.

Purpose

This project facilitated broad participation and collaboration in the planning and permitting of transmission facilities for two major California renewable resource zones—the Tehachapi Wind Resource Area and the Imperial Valley. As part of this collaborative process, the project was to help identify solutions to problems that created roadblocks to the construction of new transmission facilities.

Project Objectives

Project objectives were to:

- Provide a complete and comprehensive conceptual transmission development plan that would allow approximately 4,500 megawatts (MW) of wind power generated in the Tehachapi area to reach load centers in California (Appendices A and B).
- Provide a comprehensive conceptual plan for the Imperial Valley that would allow approximately 2,000 MW of geothermal power generated in the Imperial Valley area to reach load centers in California (Appendix C).
- Establish the institutional cooperation among federal, state, and local agencies needed for these transmission plans to be implemented, the generation facilities constructed, and the energy to be provided to consumers.

The CPUC ordered the establishment of the Tehachapi Collaborative Study Group to plan the export of wind power from that region, and both the CPUC and the Energy Commission supported formation of an Imperial Valley Study Group to plan the export of renewables from that region.[1] To accomplish the above objectives, the project was intended to help form these two transmission planning collaboratives and to assist the working groups in:

1 California Public Utilities Commission, "Interim Opinion on Transmission Needs in the Tehachapi

- Preparing conceptual plans for needed transmission infrastructure.
- Performing electric production simulation and dynamic analysis studies.
- Addressing transmission cost recovery and power procurement issues.
- Recommending measures for streamlining the permitting process.

Work under this contract supported:

- Completion of final conceptual transmission project designs.
- Approval of the designs by the California ISO.
- Submission of applications to the CPUC for certificates of public convenience and necessity (CPCN), which are applications for permission to construct transmission facilities.
- Eventual construction of transmission facilities to access renewable resources.

Notably, the objectives of the project did not include decisions involving the routes for the transmission lines.

Project Outcomes

The California ISO Board of Governors designed, studied, and approved both the Tehachapi and Imperial transmission infrastructure projects.[2] San Diego Gas & Electric (SDG&E) has filed a CPCN application for the Sunrise Powerlink, a major portion of the export plan recommended by the Imperial Valley Study Group (Appendix C); the application was approved by the California Public Utilities Commission (CPUC) on December 18, 2008.[3] Applications have also been filed and approved by the CPUC for all segments of the Tehachapi project.[4]

The permit review process at the CPUC has been substantially streamlined, incorporating most of the recommendations of both the Imperial Valley Study Group and the Tehachapi Collaborative Study Group, and a project manager has been appointed by the CPUC to expedite further work on the Tehachapi project, as proposed by the Tehachapi Collaborative Study Group.[5]

Wind Resource Area" Decision 04-06-010, June 9, 2004.

2 California Independent System Operator, "Decision on Tehachapi Project," January 24, 2007; California ISO, "California ISO Board Approves Tehachapi Transmission Project," and "California ISO Board Approves Sunrise/Greenpath Transmission Project."

3 <http://docs.cpuc.ca.gov/WORD_PDF/FINAL_DECISION/95750.PDF >.

4 For segment 1: http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/65273.pdf; for segments 2 and 3: http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/65666.htm; for segments 4 – 11: http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/111744.pdf.

5 California Public Utilities Commission, Assigned Commissioner's Ruling, I.05-09-005, July 13, 2006, p.7.

Cost recovery issues have been resolved largely with the establishment of a backstop ratemaking mechanism and when the Federal Energy Regulatory Commission (FERC) approved in April 2007 the concept of a third category of transmission ratemaking proposed by the California ISO.[6]

These successful outcomes represent significant steps toward California's goal of incorporating large amounts of renewable energy into the state's electricity portfolio.

Conclusions

The successful outcomes of the project demonstrate the value of collaborative planning for new transmission projects and the usefulness of facilitation by experts knowledgeable in transmission-related issues. A consensus commitment to collaborate further on transmission planning for renewable energy resources was made by all parties at an April 2007 workshop held by the Energy Commission.[7]

The need for transmission facilities to access Tehachapi and Imperial Valley was widely accepted by most stakeholders before the planning process began. Agreement on the need for these facilities was essential and provided the impetus for stakeholders to participate in the deliberations.

The absence of high-level representation in the working groups slowed the planning process. To expedite the process, decisions must be made quickly, and representatives with the authority to make such decisions need to be involved.

The studies required for successful planning are complex and time-consuming. Participating stakeholders should commit competent staff to this work and provide staff with adequate support. In addition, it is essential to have competent leadership of the working groups to avoid wasting time.

Comprehensive reports on the detailed studies undertaken by each study group, the participants involved, processes they used to perform their work, and their recommendations are included in the final reports of the two groups:

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6 Federal Energy Regulatory Commission, Washington, D.C., April 19, 2007, Docket No. EL07-33-000, 119 FERC ¶61,061. Order Granting Petition for Declaratory Order to the California Independent System Operator Corporation.

7 Joint Committee Workshop on Removal of Transmission Barriers for Renewables and Examination of Transmission Corridor Initiatives. See Transcript of the joint IEPR/ Electricity Committee April 17, 2007 *Workshop on* Remov*al of Transmission Barriers for Renewables and Transmission Corridor Initiatives*, pp. 203-205, California Energy Commission, Sacramento, CA, <http://www.energy.ca.gov/2007_energypolicy/documents/2007-04-17_workshop/2007-04-17_TRANSCRIPT.PDF>, posted May 4, 2007, accessed July 31, 2007.

- *Development Plan for the Phased Expansion of Transmission to Access Renewable Resources in the Imperial Valley: Report of the Imperial Valley Study Group*, 2005 (IVSG 2005), Appendix C.[8]
- *Development Plan for the Phased Expansion of Electric Power Transmission Facilities in the Tehachapi Wind Resource Area: Second Report of the Tehachapi Collaborative Study Group*, 2006 (TCSG 2006), Appendices A and B.[9]

Recommendations

In 2006 the California Legislature passed and the Governor signed Assembly Bill (AB) 32 (Núñez, Chap. 488, Stat. of 2006), establishing aggressive goals to significantly reduce greenhouse gas emissions statewide by 2020. Substantial increases in the use of renewable energy resources, together with transmission facilities to access these resources, will be required to meet the AB 32 goals. Due to the long lead times needed to plan and construct transmission facilities, the contractor recommends the following:

- Analysis of potential renewable energy resource zones on which California will rely to meet the AB 32 goals should proceed immediately. Consensus agreement on the designation of the zones to be developed should be made as soon as possible so that transmission planning can get underway.
- The collaborative process should be used in the renewable resource zone designation process and in all planning for major transmission projects to access these zones. The working groups should involve high-level representatives of all significant stakeholders as early as possible in the process.
- Key stakeholders must commit to allocating sufficient staff to accomplish the tasks involved and to expediting the work by their organizations needed to complete the process.
- Efforts should continue to further streamline the transmission permitting process, assure that reasonable costs can be recovered, and assure that commitments are made to develop the renewable resources to be accessed.
- Project managers should be designated to represent the state's interests in expediting the approval and construction of each major transmission project, and this practice should become standard procedure.
- Knowledgeable independent experts should facilitate the resource designation and transmission planning processes, and this should become standard practice.

8 Available at: www.energy.ca.gov/ivsg.

9 Filed in CPUC proceedings I.00-11-001 and I.05-09-005, April 19, 2006.

Benefits to California

Meeting California's renewable energy goals will require a substantial expansion of the state's electric transmission infrastructure. Decisions to do so are technically complex, and potentially controversial and require consensus from a wide variety of agencies and stakeholders. With assistance from this project, the Tehachapi and Imperial Valley study groups completed plans for two major transmission upgrades that will accommodate renewable energy resources. The most notable recommended upgrades were the Tehachapi and Sunrise Powerlink projects. All segments of the Antelope Transmission Project (segments 1 – 3 of the larger Tehachapi Renewable Transmission Project (TRTP)), the TRTP (segments 4 – 11) and the Sunrise Powerlink have received CPCNs. This project has demonstrated the value of collaborative planning for transmission facilities needed to access renewable resource areas.

1.0 Introduction

Background

The State of California has adopted a number of policies to increase the use of renewable energy resources for electric generation. Senate Bill (SB) 1078 (Sher, Chap. 516, Stat. 2002) established a Renewables Portfolio Standard (RPS) requiring that California load-serving entities procure no less than 20 percent of their electric energy from renewable energy resources by the year 2017.[10]

In 2004, the California Public Utilities Commission (CPUC) established the Tehachapi Collaborative Study Group (TCSG) in Decision 04-06-010 to provide advice on planning transmission facilities to access wind power in the Tehachapi region. The TCSG's report was submitted to the California Public Utilities Commission on March 14, 2005. Unfortunately, the TCSG had neither the time nor the resources to develop a complete transmission plan, but it did a credible job of describing the issues and alternatives and began work on a conceptual transmission plan. However, a complete Tehachapi transmission plan remained unfinished until the completion of the work under this contract.

In addition, several institutional and regulatory barriers threatened to disrupt the implementation of the Tehachapi transmission plan and interfere with the prompt development of wind power generation in the Tehachapi area, for example, how current rules governing how investments in transmission facilities are recovered; and the uncertainty over the roles that municipal and private utilities would play, both in the construction of transmission facilities and in the development of wind generation that would use the facilities. Current rules governing grid operations, the permit review process, and acquisition of rights of way were also potential problems that would have to be addressed if wind power from Tehachapi would contribute fully to the state's renewable energy goals.

In the same decision, the CPUC also required the TCSG to consider whether to form additional planning collaborative groups to develop transmission solutions to access renewable resources in other areas of the state. In response, the TCSG established a committee to explore the formation of a study group to develop transmission solutions to access geothermal resources in the Imperial Valley. As a result, a study group for the Imperial Valley area, the Imperial Valley Study Group, was created under this policy directive from the CPUC, and its work was supported by several initiatives at the Energy Commission, including this contract.

The Energy Commission's Integrated Energy Policy Report (IEPR) proceeding also called for the development of transmission solutions capable of accessing renewable resources, including Imperial Valley geothermal resources. The initial meeting of the Imperial Valley Study Group was in November 2004. The work that was proposed under this contract would further the work of both study groups.

10 See Cal. Pub. Utils. Code §§ 387, 390.1, 299.5, and 399.11, et seq.

The RPS mandate was amended in 2006 by SB 107 (Simitian, Chap. 474, Stat. 2006) accelerating the 20 percent renewable requirement to the year 2010. The state Energy Action Plan II adopted by the CPUC, the Energy Commission, and supported by the Governor, increases the renewable requirement to 33 percent by the year 2020.[11] This policy was the subject of legislation introduced in 2007, SB 411 (Simitian and Perata).

In 2006 California approved Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, (Núñez, Chap. 488, Stat. 2006) requiring reductions in the state's greenhouse gas emissions to 1990 levels by 2020. Governor Schwarzenegger established a 33% state goal in Executive Order (EO) S-14-08, signed November 17, 2009. Governor Schwarzenegger signed EO S-21-09 on September 15, 2009 directing the California Air Resources Board (CARB) to adopt regulations requiring 33 percent of electricity sold in the state come from renewable energy by 2020. The CARB Board passed Resolution 08-047 on December 11, 2008 which detailed its Climate Change Scoping Plan. Regulations implementing AB 32 have been developed by the California Air Resources Board and require substantial increases in the use of renewable energy resources for electric generation.

California's energy policies require the rapid development of the state's non-fossil energy resources for electric generation. Additional generation from nuclear power and hydroelectricity is not expected to be able to play a role in the implementation of these policies within this time frame. The remaining commercially available non-fossil electric generation technologies rely on renewable energy from solar, wind, geothermal, and biomass resources. To meet the AB 32 goals, renewable generators must be able to develop the resources and deliver power to customers by 2020.

These resources often are locationally constrained. While fossil fuels can be transported to conveniently located power plants, generation from renewable energy resources must occur where the resources are found naturally. Electricity generated in the frequently remote renewable resource areas must be connected to the existing electric grid by high voltage transmission lines. The existing grid may also require reinforcement to accommodate the resulting new power flows.

Therefore, to achieve the renewable energy goals, the state's transmission infrastructure must be expanded rapidly. However, planning, permitting, and construction of transmission facilities are complex processes involving technical and policy issues and requiring many years of effort. In addition, construction of new high voltage power lines can be controversial with the public. This project was designed to expedite the expansion of electric transmission infrastructure to accommodate the state's renewable energy goals by facilitating the planning and permitting process.

11 http://www.energy.ca.gov/energy_action_plan/index.html.

2.0 Project Objectives

The objectives of the project were: (1) to produce detailed conceptual transmission plans having stakeholder consensus for accessing two of California's major renewable resource areas, and (2) to support the institutional changes necessary to accelerate the approval and construction of the facilities. Electric generation from the Tehachapi Wind Resource Area, located east of Bakersfield, has the potential to be expanded by 4,500 MW or more (Appendices A and B). Imperial Valley, located east of San Diego, has geothermal energy resources with potential for an additional 2,000 MW and solar energy resources of 11,000 MW or more.[12]

The project's first objective was to obtain commitments from various relevant entities to provide executive-level representation to two collaborative working groups formed to oversee the planning and permitting processes for Tehachapi and Imperial transmission.

Once the working groups were established, the project was to provide facilitation services to the working groups and to assist them in:

- Preparing conceptual plans for needed transmission infrastructure.
- Performing production simulation and dynamic analysis studies.
- Addressing transmission cost recovery and power procurement issues.
- Streamlining the permitting process.

The groups' goals were to finalize project plans, to gain approval of these plans by the California ISO, and to have applications submitted to the CPUC for CPCNs.

12 Energy Commission, Publication # 500-03-080, *Renewable Resources Development Report*.

3.0 Project Approach

As originally envisioned, the first task in the project was to organize two implementation groups consisting of high-level representatives from essential stakeholder organizations to oversee planning for the two projects—the Tehachapi project and the Imperial Valley project. In addition, the implementation groups were intended to address crucial development issues including:

- Funding and cost allocation
- Permit streamlining and review
- Rights-of-way
- Joint operating agreements
- Purchase of renewable energy

The contractor held meetings with both investor-owned utilities (IOUs) and publicly owned utilities (POUs), the CPUC, the Energy Commission, renewable energy developers, trade organizations, federal, state, and local land management agencies, and environmental organizations. However, key stakeholders declined to provide management-level representation. This significantly hindered the work of the TCSG in particular (Appendices A and B).

In Decision (D.) 04-06-010, the CPUC ordered formation of the TCSG.[13] The decision also contemplated formation of additional study groups, including specifically one to develop transmission export plans for the Salton Sea region in the Imperial Valley of California; the Energy Commission also actively supported formation of the IVSG in its 2005 *IEPR* proceeding.[14] The TCSG and the IVSG became the forums for developing stakeholder consensus transmission export plans for the two regions. Staff from many, but not all, of the affected stakeholders participated regularly in TCSG meetings and activities, and the contractor provided facilitation services to both study groups.

The goal of the study groups was to produce consensus recommendations for transmission plans adequate to access the target renewable resources. The process involved developing one or more conceptual plans, testing these plans for system reliability with power flow and dynamic analyses, modifying the plans as necessary, comparing the plans' estimated costs and benefits, and choosing the most cost-effective plan for implementation.

Cost allocation and cost recovery, permitting and approval processes, coordinating transmission development with resource procurement, and coordinating California ISO operations with POU control area requirements all bore significantly on the transmission development process and were addressed both by the study groups and by the contractor in

13 "Interim Opinion on Transmission Needs in the Tehachapi Wind Resource Area," June 9, 2004.

14 http://www.energy.ca.gov/2005_energypolicy/index.html.

additional ad hoc meetings with stakeholders and in workshops held by the CPUC, the Energy Commission, and the California ISO dealing with these issues as discussed below.

The Study Group Process

Imperial Valley Study Group

At its first meeting on November 18, 2004, the IVSG adopted ground rules for cooperative group interaction. These were intended to make its work and decision-making as transparent as possible. Minutes of each meeting, reviewed, and adopted by participants, have established a written record of the group's (and each committee's) progress. Meeting agendas, minutes, and presentation materials are available on the IVSG website, http://www.energy.ca.gov/ivsg. Minutes of the IVSG Technical Work Group discussed study assumptions and the results of the technical transmission planning studies performed. This study work was reviewed at each meeting of the full IVSG. Overall, the IVSG pursued its technical work in ways that helped to build stakeholder support for its recommended development plan. Participants recognized collaboration as essential to the development of this broad support.

The plenary IVSG established three committees to pursue its planning work:

- A steering committee, to direct the overall effort. The steering committee had lead responsibility for compiling the group's work into a recommended development plan. Members included the Imperial Irrigation District (IID), San Diego Gas and Electric (SDG&E), Southern California Edison (SCE), CPUC, California ISO, CalEnergy, and the Energy Commission contractor, the Center for Energy Efficiency and Renewable Technologies (CEERT).
- A technical work group (TWG), to perform detailed transmission planning studies. TWG members included all the transmission owners in the region (IID, SDG&E, SCE, Comisión Federal de Electricidad (CFE), Western Area Power Administration (Western), Arizona Public Service (APS), Metropolitan Water District (MWD), and CalEnergy), the California ISO, the CPUC, and CEERT.
- The permitting work group (PWG), to identify all required permits and to design a plan to consolidate and expedite the permitting of the entire 2,200 MW generation-transmission development. The PWG worked to inform many local, state, and federal agencies and organizations that might be involved in or affected by the development. PWG members included: Border Power Plant Working Group, CalEnergy, California Department of Parks and Recreation, IID, Imperial County Planning and Development Services Dept., Imperial County Air Pollution Control District, Los Angeles Dept. of Water and Power (LADWP), SDG&E, Sempra, the Sierra Club, SCE, and the U.S. Bureau of Land Management (BLM).

After discussion, the IVSG adopted an initial study plan proposed by IID, CalEnergy, CEERT, and SDG&E at its first meeting. The IVSG subsequently approved amendments to this plan, as it evolved to incorporate the results of completed studies. Power flow and other transmission

planning studies were performed by the major transmission owners and the California ISO. As agreed, each participant paid its own costs.

IVSG ground rules committed study group participants to work in good faith toward consensus support for a recommended development plan. The ground rules also specified that if it proved impossible to arrive at a consensus recommendation, participants disagreeing with the majority plan were encouraged to submit written critiques, and/or alternative development plans.

A draft of the IVSG report was written by the steering committee and sent to the entire IVSG and the Southwest Transmission Expansion Plan (STEP) distribution lists with a request for comment. The comments were then reviewed by the steering committee and incorporated into the report as deemed appropriate.

STEP was a forum organized by the California ISO for reviewing transmission planning studies underway in the Arizona-Southern Nevada-Southern California region. STEP had no staff or members and did not study or recommend transmission projects. However, this contract required that the Imperial Valley and Tehachapi conceptual development plans be vetted through the STEP forum.

The plenary IVSG met five times between November 2004 and the submittal of its report on September 30, 2005 (Appendix C). The TWG met biweekly during this period to accommodate the substantial workload of transmission planning studies required.

During development, the IVSG reported its transmission planning studies of routing alternatives at every STEP meeting starting in December 2004. In September 2005, a draft of the IVSG development plan was sent to all 290 people/organizations on the STEP distribution list with a request for comment; several STEP participants did send in comments, which were incorporated in the IVSG final report. As a result of this monthly reporting of IVSG progress at STEP meetings and the involvement of STEP members in reviewing the IVSG report, all STEP participants were fully informed about the IVSG.

The study of Imperial Valley transmission upgrades was coordinated through the Western Electricity Coordinating Council (WECC) path rating process, per established WECC procedures. SDG&E, IID and LADWP were required to bring their proposed upgrades to WECC for approval. STEP tracked the WECC study process, but there was no mechanism or need for getting STEP participants to agree to study Imperial Valley transmission additions.

The PWG met six times, beginning in April 2005, to involve county, state, and federal agencies in designing a plan for consolidating and expediting permitting and approvals. The 39 organizations that participated in study group meetings are identified in the IVSG final report (Appendix C).

The *Development Plan for the Phased Expansion of the Transmission to Access Renewable Resources in the Imperial Valley (Imperial Valley Final Plan)* identified a 500 kilovolt (kV) line from the Imperial Valley substation to central San Diego County as necessary for the export of 2,200 MW of

renewable resources from the region (Appendix C). Shortly after the plan was released, IID and SDG&E announced competing proposals to build the portion of this line in Imperial County.[15] This competition undermined the willingness of the two organizations to cooperate on regional transmission development, and also undermined their willingness to participate in any Imperial Valley Implementation Group (IVIG).

Tehachapi Collaborative Study Group

The TCSG met for the first time in June 2004 (prior to the initiation of this contract) and continued meeting approximately every month through March 2006. Stakeholders who regularly attended included PG&E, SCE, CPUC, Energy Commission, CEERT, California ISO, Oak Creek Energy, enXco, PPM Energy, and the California Wind Energy Association (CalWEA). There was an enormous diversity of opinions among participating stakeholders regarding appropriate conceptual plans, and progress toward consensus was slow. Discussions were frequently sidetracked by the peripheral issues mentioned, especially issues related to permitting and cost recovery.

In March 2005, the TCSG issued its report describing the status of the group's deliberations recommending that the group continue its work and further recommending that the CPUC address the peripheral issues in other forums.[16] The report was accepted by the CPUC, and the TCSG continued its efforts for another year.

From 2004 through the summer of 2005, CPUC staff and PG&E had advocated construction of a phase-shifted connection between the SCE Big Creek lines and the PG&E system near Fresno. They argued that such a connection could transmit power north from Tehachapi on the Big Creek lines at least some of the time, and they insisted that this connection be studied as part of the Tehachapi planning process. SCE maintained that its studies showed that no more than 200 MW of Tehachapi power could flow into the PG&E system without major upgrades of 200 miles of line. The issue of the Fresno phase-shifter remained to be resolved.

The TCSG group met on September 19, 2005, the day before this contract began. At that meeting, Paul Steckley of the California ISO presented his second set of production cost modeling studies, which indicated that insertion of the full 4,500 MW assumed for Tehachapi would cause minimal congestion on the system if generation in the WECC were dispatched on a least-cost basis.

Steckley's results appeared to have put to rest opposing arguments. Previously, PG&E's transmission ranking cost reports (TRCRs) that were used to evaluate the cost of transmission to

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15 Press release, August 31, 2005, "SDG&E Unveils Plan to Build New Power Link From San Diego to Imperial Valley"[http://www.sdge.com/sunrisepowerlink/release2.html]. Also see IID presentation to the IVSG on 10/28/2005 .

16 *Development Plan for the Phased Expansion of Transmission in the Tehachapi Wind Resource Area: Report of the Tehachapi Collaborative Study Group*, March 16, 2005.

the Tehachapi area included the cost of upgrades to PG&E's system, ostensibly to reduce north-to-south (N-S) congestion on Path 15 and other lines.

During the next year, supported by this contract, the TCSG continued to refine the conceptual plans under consideration but was unable to develop consensus for a recommended plan. The CPUC ordered SCE to file on March 1, 2006, the second Tehachapi transmission report as part of proceeding I.05-09-005.[17] This was an earlier date for completion of the development plan originally contemplated in this contract, but completion of the plan by this earlier date appeared feasible at this time of the order.

Many studies remained to be performed: power flows under N-1 and N-2 conditions, dynamic analysis of voltage and frequency stability, and other issues related to the intermittency of Tehachapi generation. The second report was issued in April 2006, recommending that the conceptual plans be given to the California ISO for further refinement and study (Appendices A and B).

The California ISO accepted the challenge and included the Tehachapi and the Imperial Valley projects as part of its California Southern Regional Transmission Plan 2006 process (CSRTP-2006) together with a third project, the Lake Elsinore Advanced Pumped Storage project (LEAPS).[18] For the analysis, the California ISO combined the project proposed by SDG&E, the Sunrise Powerlink a portion of the project proposed by IID, the Green Path-Southwest section—both offshoots of the IVSG work—and gave this hybrid project the moniker of the "SunPath" project.

The contractors continued to work with the stakeholders and the California ISO throughout this process until a final recommended plan was submitted to and approved by the California ISO Board of Governors in January 2007.

The most complex issue that affected the Tehachapi planning effort involved providing assurance to the prospective transmission owner, SCE, that its investment in the proposed facilities would be recovered. These facilities would consist of high voltage transmission lines, substations, and related equipment that served two different purposes:

1. *Gen-tie* facilities to transmit power from the Tehachapi region to the existing grid, in which power flows one way.
2. *Network* facilities that expand the capacity of the grid to safely handle the additional power, in which power flows in two directions.

Network facilities approved by the FERC qualify for cost recovery through the California ISO tariff on wholesale users of the transmission grid. However, FERC waits until the facilities have been constructed and costs are known before ruling on whether the costs can be added to the

17 http://www.cpuc.ca.gov/published/proceedings/I0509005.htm, [10/25/2007].

18 California ISO. Presentation by Dariush Shirmohammadi, April 19-20, 2006: CAISO Transmission Planning for the Southern Part of the CAISO Grid.

transmission provider's Transmission Revenue Requirement, raising the possibility that the utility's investment may not be fully recovered.

At the time, FERC rules required that gen-tie facilities be financed by the generators using them rather than by users of the grid. For large fossil generation, this requirement posed no problem. But for dispersed generation by several wind generators, which was the case in Tehachapi, the FERC requirement created a serious barrier to development. Under these rules, a financial commitment must be made by the participating generators several years in advance of project construction. At the time the commitment must be made, the generators had no assurance that their power would be purchased and may not even be certain as to what generating equipment will be used. A classic "chicken and egg" situation was created in which transmission facilities could not be built until generators commit financial resources, but these resources were not available until the facilities were constructed.

A number of strategies were undertaken to address the cost recovery problems. In March 2005, SCE filed a petition with the FERC asking that all Tehachapi facilities be treated as network facilities for cost recovery purposes since their construction was to further state energy policy goals.[19] The contractors filed in support of the SCE petition.[20] The petition was denied by FERC as it pertained to segments of transmission upgrades that would carry wind power to the grid.[21]

The California Legislature also addressed the cost recovery issue by approving SB 1078 in 2002 (Sher, Chap. 516, Stat. 2002) establishing a "backstop funding mechanism" in Public Utilities Code (PUC) §399.25. This backstop mechanism authorizes the CPUC to allow utilities recovery in retail rates the costs for transmission facilities approved by the CPUC but denied by the FERC. The TCSG urged the CPUC to develop rules implementing the backstop mechanism and to declare its applicability to Tehachapi transmission facilities. The CPUC has not yet done so.

After considerable deliberation by California ISO staff, FERC staff, several stakeholders, and the contractors, the California ISO decided to file a Petition for a Declaratory Order from the FERC seeking the establishment of a third category of transmission facilities that would include the gen-ties that would be used by multiple Tehachapi generators in locationally constrained areas.[22] In October 2006, the California ISO directors approved incorporating this concept into a filing at FERC,[23] and the FERC unanimously approved the California ISO's petition in April

19 SCE, Petition for Declaratory Order, filed 3/24/2005.

20 FERC, "Motion to Intervene and Comments of the Center for Energy Efficiency and Renewable Technologies in Support of Petition for Declaratory Order," Docket EL05-80-000, April 14, 2005.

21 112 FERC 61,014, Order on Petition for Declaratory Order, Docket EL05-80-000, July 1, 2005.

22 California Independent System Operator. Petition for a Declaratory Order, January 25, 2007.

23 California Independent System Operator Board of Governors. Decision on Removing Barriers for Efficient Transmission Development.

2007.[24] As of the writing of this report, work on the tariff language to be submitted to the FERC by October 31, 2007, is underway.[25]

Purchase of Energy From Renewable Resources

The Tehachapi Wind Resource Area includes some of the highest capacity-factor (and thus most cost-effective) wind resources in the state. More than 540 MW of geothermal generation has been in operation in the Imperial Valley for more than 20 years, and the costs and expansion potential of the resource there are well known. Accordingly, Tehachapi and Imperial Valley are priority development targets for the state. However, for new transmission facilities to these resource areas to be useful, timely commitments to purchase electricity from these resources will be required.

Currently, procurement of renewable electricity by load-serving entities (LSEs) is mandated by the state's RPS program. Established in 2002 by SB 1078, this law requires each LSE to ensure that no less than 20 percent of electricity delivered was to be generated from renewable energy resources by 2017. The 20 percent target was accelerated to 2010 by SB 107 adopted in 2006, although a three year grace period was also included. Also in 2006, California approved Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, (Núñez, Chap. 488, Stat. 2006) requiring reductions in the state's greenhouse gas emissions to 1990 levels by 2020. Governor Schwarzenegger established a 33% state goal in Executive Order (EO) S-14-08, signed November 17, 2009. Governor Schwarzenegger signed EO S-21-09 on September 15, 2009 directing the California Air Resources Board (CARB) to adopt regulations requiring 33 percent of electricity sold in the state come from renewable energy by 2020. The CARB Board passed Resolution 08-047 on December 11, 2008 which detailed its Climate Change Scoping Plan. Regulations implementing AB 32 have been developed by the California Air Resources Board and require substantial increases in the use of renewable energy resources for electric generation.

Although the procurement process is separate from the transmission planning process, clearly the two must be coordinated. To assist this coordination, the contractor engaged in an ongoing series of discussions with LSEs to identify perceived barriers to procurement of Tehachapi and Imperial Valley resources.

Other Issues

The contractor and other stakeholders participating in both the TCSG and IVSG identified permitting issues as a potential roadblock to speedy development of transmission facilities (Appendix AA). A workshop was held by the CPUC staff to identify issues to be addressed, and a series of discussions with CPUC staff took place. There was consensus agreement by both study groups that the agencies involved in permitting transmission facilities needed to anticipate permitting issues and proactively plan to address them. In addition, the TCSG

24. FERC, Order Granting Petition for Declaratory Order, April 19, 2007, 119 FERC 61,061.

25 California Independent System Operator, Location Constrained Resource Interconnection (LCRI) Policy.

recommended that a project manager be appointed by the CPUC to anticipate and address permitting issues and to oversee all aspects of the CPUC's involvement in the development of the Tehachapi project. This recommendation was implemented by the CPUC.[26]

There was disagreement among stakeholders regarding the difficulty of identifying, acquiring, and maintaining rights-of-way for transmission facilities. The TCSG discussed the need to address these issues on several occasions, but no consensus on the urgency of these issues was developed.

In the IVSG, both the El Centro and Palm Desert field offices of the BLM were actively involved. BLM identified the existing utility corridors that have been designated in the California Desert Conservation Area Plan in Riverside and Imperial counties. The IVSG PWG investigated the feasibility of preparing one National Environmental Policy Act (NEPA) document, a programmatic environmental impact statement (PEIS,) with the BLM to designate new utility corridors, in which utility rights-of-way could be granted for the project, but the group could not reach consensus. All utilities had concerns about corridors being placed in their service territories that might allow other utilities to build within existing systems. In addition, SDG&E and LADWP were still investigating routing alternatives and were unable to identify potentially workable corridor locations precisely enough. The PWG subsequently abandoned the idea of developing one NEPA document that would analyze the environmental impacts of amending the Desert Plan to add utility corridors. The utilities did, however, agree to identify corridor locations so that such corridors could be presented in the PEIRs.

Contract Amendment

The contract scope of work was defined in spring 2005, but the contract start was delayed until September 20, 2005. In the intervening months, significant work on several contract tasks was performed, funded by pro bono contributions of time and expenses by the contract subcontractor; none of it was funded by the PIER Program or other Energy Commission monies. This advanced the timetable of several tasks, and new developments affected the prior expectations for the contractor's effort on several tasks.

In August 2006, the contract was amended to reflect developments that were unanticipated at the time that the contract was drafted. The work to date on each affected task was summarized, and changes to each contract task were detailed. The contract amendment was approved at an Energy Commission business meeting on August 16, 2006. The summary of work on the various tasks and the changes approved are detailed below.

Original Task 2, Establish IVIG

Between September 20 and September 30, 2005, CEERT proposed to the IVSG that key stakeholders establish a smaller, senior-level implementation group to move the IVSG

26 California Public Utilities Commission, Assigned Commissioner's Ruling, I.05-09-005, July 13, 2006, p. 7.

development plan toward permit approvals, financing, and construction. (This proposal is Chapter 6 of the IVSG report, filed September 30, 2005.)

CEERT also conducted informal discussions with senior management of IID and SDG&E about establishing an IVIG. For the next seven months, CEERT explained the rationale for, and suggested formation of, an IVIG with key Imperial Valley parties including SDG&E, IID, SCE, CPUC, California ISO, and CalEnergy. This work involved many discussions with each, including more than eight meetings and phone conferences with senior management of SDG&E alone. CEERT also made the case for the usefulness of an IVIG to advance the progress on the proposed transmission projects at every STEP meeting since the beginning of the contract, which alerted the broader regional community of transmission stakeholders of the intent of the Energy Commission and CPUC to support expedited development of the transmission necessary to access regional renewable resources.

However, IID and SDG&E were in intense bilateral negotiations over who would build portions of the transmission infrastructure in Imperial County. Pending the outcome of those negotiations, neither IID nor SDG&E saw the need for, or appeared willing to support the establishment of, an IVIG. CEERT continued discussions with the potential members of the IVIG over the next several months, but the key organizations would not agree to participate.

However, CalEnergy, IID, LADWP, and SDG&E agreed to form a group to coordinate the work and share the expense of preparing a programmatic EIR for the overall generation-transmission development. These entities signed a memorandum of understanding (MOU) to this effect. This "MOU Group" may be able to serve several of the purposes of an IVIG. At the time it appeared possible that if these parties could not be persuaded to establish the IVIG, it might be possible to achieve the objectives of this contract by substituting this "MOU Group" for the IVIG.

CEERT met with CPUC Commissioner Dian Grueneich to enlist her help in contacting the senior management of the IOUs to pursue formation of an IVIG and developed the agenda for a high-level meeting to initiate the implementation group process. The CPUC decided, however, not to pursue this approach, but rather to address key issues through the I.05-09-005 proceeding. SDG&E was ordered to file the *Development Plan for the Phased Expansion of the Transmission to Access Renewable Resources in the Imperial Valley* (Appendix C) in CPUC proceeding I.05-09-005, when it was completed in September 2005. The CPUC ordered SCE to file the second Tehachapi transmission report in spring 2006 as part of the same proceeding (Appendices A and B).

Developments That Prevented Formation of an IVIG

The major new facilities proposed by the IVSG plan were a 500 kV line from the Imperial Valley substation near El Centro to central San Diego County and associated substations. SDG&E indicated its interest in building this line during the IVSG process, and IID also indicated interest in building the Imperial County portion of such a line.

One month after the IVSG completed its conceptual transmission plan, IID, the Los Angeles Department of Water and Power (LADWP) and Citizens Energy Corporation (the "Green Path" parties) submitted a proposal to the WECC path rating process for this line, without any role for SDG&E in the project. The Green Path parties further proposed that all California ISO ratepayers should pay for the new facilities, even though they would be operated by LADWP and IID and not be part of the California ISO control area. (During the same time frame, LADWP approached IID with a proposal, the Indian Hills-Upland Transmission Project, that would allow delivery of renewable resources from the Imperial Valley to LADWP customers, and that could interconnect with the proposed Palo Verde–Devers 500 kV #2 transmission line, which has been approved by the CPUC).[27] This began a hostile competition between SDG&E and the Green Path parties as to who would build the line. SDG&E then filed the initial portion of its CPCN application to the CPUC for the Sunrise Powerlink Project at the CPUC on December 14, 2005.[28]

Given this hostile competition, the key parties were unwilling to consider working cooperatively in a forum like the proposed IVIG. Meanwhile, each party worked separately to further define its proposed project and advance it in the permitting and approval process.

On March 20, 2006, SDG&E and IID announced that they had negotiated an agreement to cooperate on the construction of the 500 kV line. IID would own the portion of the project in Imperial County, SDG&E would own the facilities in San Diego County, and operational control of the facilities would be under the auspices of the California ISO. The Sunrise Powerlink as proposed would be a network facility whose costs would be rolled into the California ISO Transmission Access Charge paid by all users of the California ISO grid. The IID portion of the 500 kilovolt (kV) line from the Imperial Valley substation to the San Diego County line would be rolled into the IID transmission charge paid by users of the IID grid. SDG&E also informed the CPUC that it would amend and refile (in summer 2006) its application for the proposed Sunrise Powerlink to reflect this new agreement.[29] IID informed the WECC that it would cooperate with SDG&E in seeking a path rating for the line from Imperial Valley to central San Diego County.

While this agreement resolved most of the hostilities between IID/LADWP/Citizens and SDG&E, each party pursued the permitting of its respective segments of the overall line. They did not think that an IVIG would help them with this process. Meanwhile, the California ISO began a new study process (CSRTP-2006) to consider the effects of integrating both geothermal power from Imperial Valley and the Tehachapi wind power, discussed in both the First and Second Tehachapi Collaborative Study Group reports. The California ISO study evaluated the regional impacts—how interjecting substantial amounts of wind, solar, and geothermal power

27 California Public Utilities Commission, Proceeding A.05-04-015.

28 California Public Utilities Commission, Proceeding A.05-12-014.

29 California Public Utilities Commission, Proceeding A.06-08-010.

could affect the day-to-day operation of the transmission grid, and the economic impacts of these resources on power supplies—of three major proposed projects in the Southern California area: Lake Elsinore Advanced Pumped Storage (LEAPS); Sunrise Powerlink and the Green Path; and Tehachapi. The Sunrise Powerlink and Green Path projects would be the vehicle to export geothermal power from the Imperial Valley. This study process involved SDG&E, IID, SCE, and the California ISO working closely together and entailed some of the cooperative interaction (on planning issues) that this contract envisioned being provided by an IVIG.

As planned, this California ISO process also would make heavy demands on the staff time of the key Imperial (and Tehachapi) parties. It was scheduled to continue at least until September 2006, with additional work required for the remainder of 2006. SCE, SDG&E, and PG&E expressed great concern about the resource demands that were imposed by the (Tehachapi and Imperial Valley) study group processes. Thus, with the initiation of the new California ISO study process and the utility staff time required to support work in proceedings related to the Tehachapi and Imperial projects (e.g., I. 05-09-005, R06-02-012 and each IOU's CPCN applications), the utilities continued to be unwilling to consider formation of an additional group, the proposed IVIG. These facts combined make any further efforts unrealistic towards forming the IVIG.

Due to the roadblocks to establish the IVIG, a substantial part of the work was completed by the IVSG instead of the IVIG and coordinated under this contract. All conceptual-level planning for new transmission in the region was completed.

The CPCNs for the Sunrise Powerlink Project and the proposals for the Green Path Coordinated Projects have resulted from the work done in the IVSG. Therefore, the *Establish the Imperial Valley Implementation Group Report* (Appendix F) and the Sunrise Powerlink CPCN and Green Path proposals were submitted in place of the original deliverables.

Thus, the projects being pursued were in substantially the same form as they were identified in *Development Plan for the Phased Expansion of Transmission to Access Renewable Resources in the Imperial Valley: Report of the Imperial Valley Study Group* (Appendix C) that was prepared by the IVSG. Therefore, this report was accepted in lieu of an additional "Final Imperial Valley Conceptual Development Plan."

Original Task 3, Coordination With the Southwest Transmission Expansion Project

This task was to integrate Imperial Valley export development planning with STEP because it would both affect and be greatly affected by regional energy flows. STEP studies recommended and sought support for the proposed reliability upgrades and congestion relief in the Southern California/Arizona/Nevada region.

The contractor submitted the *Imperial Valley Regional Network Upgrade Report* (Appendix F), which completed the IVSG's transmission planning work, and the results reported were

reviewed and adopted by the full collaborative. The major network upgrades identified by the IVSG were advanced to the permitting and approval stage.

Original Task 4, Imperial Valley Conceptual Development Plan

The contractor prepared and filed the *Report of the Imperial Valley Study Group* as part of the *Integrated Energy Policy Report* (*IEPR*), Energy Commission Docket #04-IEP-1F, on September 30, 2005. The contractor and the Commission contract manager reviewed and concurred with the recommendation of the key IVSG parties (IID, SCE, and SDG&E) that there was no need to revise or update the *Development Plan for the Phased Expansion of the Transmission to Access Renewable Resources in the Imperial Valley* (Appendix C). The contractor presented the *Development Plan* at the October 28, 2005, STEP meeting and reviewed its status in the 2005 IEPR proceeding and in the CPUC Proactive Transmission proceeding, I.05-09-005. The *Development Plan* was publicly reviewed at a CPUC workshop on December 7, 2005.

The contractor submitted the *Report of Completion and Transmittal of Deliverables,* including the second critical project review (CPR) Report on February 10, 2006 (Appendix H).

Original Task 5, Production Simulation Studies

This task was to develop a prioritized list of the alternatives proposed in the *Development Plan*. As directed by Task 5, the contractor's subcontractor persuaded the California ISO to perform production simulation studies of IVSG development alternatives, and the IVSG used the results of these studies to prioritize those alternatives into a phased development plan. At the time it appeared that additional production simulation studies might be necessary to evaluate the effect of adding the proposed tie between the IID and LADWP systems on transmission congestion, losses, and regional power prices. These additional production simulations were included in the draft and final *Imperial Valley Production Simulation Study Report* (Appendix I).

The IVSG incorporated the results of the production cost simulations, the results of its power flow and stability studies, and the capital cost estimates of the final alternatives in its consideration of the transmission solution to be recommended in the IVSG report.

Original Task 6, Dynamic Analysis Studies

This task verified that the local, statewide, and southwest regional grids could be operated reliably with the proposed new generation and transmission connected. To do this it was necessary to conduct dynamic stability, voltage stability, and short-circuit analysis studies. These studies looked at the proposed collector systems, the network connections, and the network upgrades necessary to make the power deliverable.

The contractor coordinated dynamic analysis studies of IVSG transmission alternatives by the affected transmission owners. This work was done in accordance with California ISO and WECC standards. The results of these studies confirmed that the final transmission plan for the export of Imperial Valley renewable resources recommended by the IVSG meets all grid reliability requirements in the *Imperial Valley Dynamic Analysis Study* (Appendix J).

Original Task 7, Recommendation for New and Upgraded Transmission Facilities

This task was to select the alternatives to be developed into complete applications for new and upgraded transmission facilities. This selection was made, and each of the projects progressed from the conceptual stage to definitive planning, revolving around a detailed plan of service and WECC approvals.

Due to the roadblocks to establish the IVIG, as detailed under Original Task 2, a substantial part of the work was completed by the IVSG instead of the IVIG and coordinated under this task. All conceptual-level planning for new transmission in the region was completed.

The CPCNs for the Sunrise Powerlink Project and the proposal for Green Path Coordinated Projects have resulted from the work done in the IVSG. Therefore, the Sunrise Powerlink CPCN and Green Path proposals, along with a brief summary (the "Final Report") were submitted in place of the original deliverables.

Today projects are being pursued in substantially the same form as they were identified in Imperial Valley Conceptual Development Plan (Task 4) that was prepared by the IVSG. As a result, the *Development Plan for the Phased Expansion of the Transmission to Access Renewable Resources in the Imperial Valley* (Appendix C) was accepted as the deliverable for this task.

Original Task 8, Cost Allocation

This task recommended how costs should be allocated for all components of the selected transmission development plans, including "renewable energy trunk lines" to connect renewable resource areas to the regional grid, any local collector system, and "gen-ties" that connect individual generating projects to the collector system. This would cover who pays for the upfront permitting and transmission construction costs, the generation developers or the transmission owners.

One of the IVSG's significant accomplishments was to precipitate a decision by IID to fund the upgrades of its transmission system necessary to export renewable power. IID began to investigate the availability of tax-exempt financing for this construction. IID planned to seek cost recovery in charges to use its system (i.e., through its Open Access Transmission Tariff). SDG&E, however, was concerned that these transmission charges, especially for the section of the 500 kV line from the Imperial Valley (IV) substation to the San Diego County line, could make IV geothermal power prohibitively expensive because the costs could be spread only across (the relatively few) users of the IID system. By contrast, the costs of SDG&E's proposed Sunrise Powerlink would be spread across all users of the California ISO-controlled transmission grid.

The cost responsibility of non-network connections, such as those in the Sunrise Powerlink, IID internal system upgrades, and the LADWP Indian Hills-Upland projects was to have been the major focus of the *Imperial Valley Cost Allocation Recommendation Report* in Task 8. However,

since the parties announced a cooperative agreement on April 20, 2006, rather than the competitive projects once proposed, there was no need for such a report. Thus, Task 8, Cost Allocation, was no longer needed.

With cost recovery effectively assured, there was no need for the *Imperial Valley Alternative Funding Report* (Task 9). Further, because IID and LADWP elected to build their upgrades as merchant transmission projects, there was also no need for an *Imperial Valley Public Power Funding Report* (Task 9). The IVSG transmission plan appeared to make it possible that renewable generators located anywhere in Imperial Valley would be able to connect to the IID system without the need for "renewable energy trunk lines," non-network extra high voltage (EHV) connections of multiple renewable generators to the grid. Thus, these tasks were eliminated.

Overview of Changes to Original Tasks 8 and 9

The potential problems anticipated in the original *Development Plan for the Phased Expansion of Transmission in the Tehachapi Wind Resource Area: Report of the Tehachapi Collaborative Study Group* were due largely to the structure of existing transmission facilities in the region and the location of renewable generators relative to those facilities.[30] The three projects that actually emerged—SDG&E's Sunrise Powerlink, IID's internal system upgrades ("Green Path Coordinated Projects"), and LADWP's Indian Hills-Upland project (that was originally part of the "Green Path Coordinated Projects") avoid most of those anticipated problems. Additionally, these projects are likely to be classified by FERC and the California ISO as network upgrades and thus be eligible to have their costs recovered in each entity's transmission revenue requirement. Thus, while the generic issue of who would pay for interconnecting renewable energy trunk lines to the transmission grid remained, this issue no longer applied to the three projects or to the work that remained in this contract.

Subsequently, on April 20, 2006, a cooperative agreement for a joint project between IID and SDG&E was announced. Therefore, there was no need for an Imperial Valley Cost Allocation Recommendation Report.

Original Task 9 (Amended Task 8), Transmission Funding

IID announced, first, that it and LADWP were cooperating in the "Coordinated Green Path Projects" that would compete with SDG&E's then-anticipated Sunrise Powerlink Project. Then SDG&E filed a CPCN application for the Sunrise Powerlink Project with the CPUC.[31] Later, IID announced a negotiated compromise to join with SDG&E in a coordinated approach to siting, building, and operating transmission lines between the Imperial Valley and SDG&E's service

30 *Development Plan for the Phased Expansion of Transmission in the Tehachapi Wind Resource Area: Report of the Tehachapi Collaborative Study Group*, March 16, 2005.

31 California Public Utilities Commission, Proceeding A.05-12-014.

area.[32] An amended application for a CPCN for the Sunrise Powerlink Project, reflecting this newest partnership, was filed in August 2006.[33]

The contractor discussed cost recovery issues with geothermal developers, LADWP, IID, and SDG&E. The discussions were about the extent to which the transmission funding issues that arose in the Tehachapi project could pertain to the Imperial transmission projects. As the agreement between the parties was developed, the contractor monitored its impact on cost recovery. Fortunately, the final agreement allowed the Imperial transmission projects to be funded according to existing procedures, and no unique financing mechanisms were required. Therefore, some initial preparation for work on this task was begun, but work could progress as originally conceived. Therefore, no additional work occurred under Amended Task 8.

Original Task 10 (eliminated), California ISO Study and Approval

This task was to ensure that transmission upgrades to connect clusters of renewable projects could be approved in advance of a signed power purchase agreement (PPA) or interconnection agreement with each generator. The original task description anticipated that the California ISO might have to amend its tariff, revise its first-come, first-served queue process so that renewable projects that are proposed to implement the RPS are studied and approved sooner rather than later, and might also require a petition to FERC, as the California ISO queue process is based on FERC policy.

However, none of the Imperial Valley transmission projects actually required California ISO approval in advance of generator interconnection requests for two main reasons. First, the major transmission component was the newly merged Sunrise Powerlink Project (the combined Green Path–Southwest component—from Narrows to Imperial Valley Substation—with the portion of the original Sunrise Powerlink project from the Central Substation to the Narrows. SDG&E argued that this line was required for reliability purposes. If this were borne out by the newly formed California ISO study group process, the CSRTP-2006, which was considering both the Tehachapi and Imperial Valley projects in the analysis of the region, then the California ISO could approve it for inclusion under its tariff, irrespective of (renewable) generator interconnection agreements.

The IVSG estimated that, once built, it would provide transmission access for the great majority of regional renewables generation development forecasted through 2016.

Second, the other major transmission component was upgrades of the IID system in Imperial County. Regardless of the status of the combined Sunrise Powerlink project, the IID upgrades

32 Imperial Irrigation District News Release "IID Energy Agrees to Coordinate Green Path with SDG&E's Sunrise Powerlink Project."

33 California Public Utilities Commission, Proceeding A.06-08-010.

were modular and could be timed to support the on-line dates of geothermal and solar generating projects requesting interconnection to the IID system.

Therefore, approval of transmission in advance of interconnection agreements, which could be at odds with the California ISO tariff, were not be an issue for the development of renewables in the Imperial Valley, and the work originally contemplated in Task 10 served no purpose.

For these reasons, Task 10 was eliminated. The remaining work under this task was moved to Amended Task 19, where it was combined with that of several other original tasks. Amended Task 19 reflected the formation of the California ISO's new study group process, the CSRTP-2006, and included both the Tehachapi and Imperial Valley projects in the analysis of that region.

Original Task 11 (Amended Task 9), Streamlining Permitting and Review

Some discussions with stakeholders occurred under original Task 11. Remaining work was consolidated with identical work from original Task 22 (related to Tehachapi), and completed in Amended Task 19. This consolidation made the management and administration of the contract more efficient.

Original Task 12 (eliminated), Rights of Way (ROW)

This task was to study regulatory policy and, if appropriate, recommend changes to policy and/or legislation to allow earlier acquisition of necessary rights of way (ROWs) by appropriate entities.

However, the ROW for most of the route of the newly proposed projects by IID and SDG&E were already secured at the time they were announced. The final report for this task was to summarize the issues involved in acquiring ROW in the Imperial Valley.

In meetings of the MOU Group, both BLM and the Imperial County Planning Department urged the group to identify additional transmission corridors in the region, in coordination with the California Desert Conservation Act that would look several decades into the future. The transmission owners and generators, however, remained unenthusiastic about such an effort. As a result, it was unlikely that any of the Imperial Valley parties would attend meetings to take up this issue, as contemplated in Task 12. This in turn would make it impossible to complete the Imperial Valley ROW Acquisition Report.

At the time of the contract amendment, it appeared that corridor reservation would not help advance any of the proposed Imperial Valley transmission projects. Any additional ROW to be acquired for each of the three proposed projects would almost certainly accommodate all the facilities needed to export to likely MW potential of Imperial Valley renewables for the next 15-20 years.

Additionally, since both the IID and SDG&E projects, announced since the inception of this contract, would largely follow existing ROW, there is no need for this task. Therefore, this task was eliminated, and the Permit Streamlining Report for Task 19 discussed ROW issues generally faced by renewable projects.

Original Task 13 (Amended Task 10), Purchase of Renewable Energy

This task was to help ensure that the purchase of renewable energy supported rapid development of Imperial Valley resources, and that power purchasers were allowed to meet their RPS obligations with Renewable Energy Credits (RECs). This could have required providing information to parties engaged in regulatory proceedings at the CPUC about both procurement schedule and procurement flexibility, and engagement with municipal utilities to ensure procurement take place in a timely fashion.

The contractor worked with renewable energy generators and potential power purchasers to explore possibilities for coordinating procurement with transmission development in the Imperial Valley. Remaining work was consolidated with identical work from Original Task 24, and completed in Amended Task 19. This consolidation made the management and administration of the contract more efficient.

Original Task 14 (eliminated), Joint Operating Agreements

This task was to determine if joint operating agreements between California ISO and the public power control areas were needed for the selected transmission development plans.

However, since SDG&E was already part of the California ISO control area, and IID indicated its willingness to put its portion of the coordinated SDG&E-IID project under California ISO control, there was no further need for this task.

Original Task 15 (Amended Task 11), Establish the Tehachapi Implementation Group (TIG) and Conduct TIG Meetings

This task was to create the Tehachapi Implementation Group (TIG) and to have it provide strategic guidance to this project by participating in regular meeting or teleconferences.

Planning and organizing generation and transmission development on the very large scale proposed requires policy-level guidance from senior decision-makers of key stakeholder organizations. The TIG was intended to provide a forum for reaching shared agreement on all elements necessary to advance the development of the proposed facilities, including regulatory policy, financing, ownership and operation. The original intent was that members of the TIG would have the authority to commit their organizations to action on these matters, and to commit their organizations' staffs and other resources to advance the necessary timely planning and development.

With the assistance of the Commission contract manager, the contractor was to recruit senior decision-makers and representatives from the stakeholder organizations to serve on the TIG. The contractor was to serve as staff to the TIG, convening meetings as necessary to accomplish the work outlined in this contract. The contractor was to convene the TIG to form working groups to perform detailed work in the areas of transmission planning, power purchase and procurement planning, permitting, and financing.

Members of the TIG were intended to include senior representatives of these stakeholder agencies and interests:

- Transmission owners (SCE, PG&E, LADWP, private owners)
- California ISO
- Wind generation development companies
- Potential power purchasers, including IOUs and publicly owned utilities
- California Public Utilities Commission
- Public interest environmental groups
- California Energy Commission
- County, state, and federal agencies having jurisdiction over land use and permitting issues affecting the development under study (including Kern County, Los Angeles County, U.S. military)

The purpose of the TIG would have been to finalize a combined generation and transmission development plan for exporting 4,500 MW of wind power from the Tehachapi region.

The contractor had a series of discussions with officials at PG&E, SCE, and other stakeholders to elicit their interest in establishing a TIG to investigate and propose solutions for Tehachapi-related issues. The contractor also met with CPUC Commissioner Grueneich to enlist her help in contacting the senior management of the IOUs to pursue formation of a TIG. The Commissioner decided to address these issues as part of a new proceeding, I.05-09-005.

Additional Developments That Prevented the Formation of the TIG

Planning for Tehachapi transmission had begun in the Tehachapi Collaborative Study Group (TCSG) in August 2004, and the contract envisioned that the TIG would oversee completion of the conceptual transmission plan. However, CPUC staff continued working on the plan with utility staff, and a second TCSG effort was eventually begun in the fall of 2005. Stakeholders preferred to allow the TCSG to proceed under CPUC auspices rather than to form the TIG to oversee the conceptual planning as envisioned in Task 16.

The CPUC, by instigating I.05-09-005 in September 2005, also accepted responsibility for other tasks envisioned as being coordinated by the TIG. The OII was scheduled to deal with cost allocation (Task 20), permit streamlining (Task 22), and renewable energy procurement (Task 24), among other issues. The stakeholders preferred to deal with these issues in the CPUC process rather than establish a separate TIG.

The contractor concluded that formation of the TIG to address all issues is unlikely and that future consensus-building efforts must be oriented around specific remaining issues.

The contract manager and the contractor have agreed that this task was as complete as possible. The *Imperial Valley Permit Streamlining Report*, a deliverable in the original contract, was combined with similar issues related to Tehachapi, and the *Permit Streamlining Report* was the deliverable in Amended Task 19.

The contractor submitted a final report (*Establish the Tehachapi Implementation Group*) on April 27, 2006.

Original Task 16 (Amended Task 12), Tehachapi Conceptual Development Plan

This task was to:

- Identify further conceptual studies needed to prepare a comprehensive conceptual development plan.
- Complete those studies.
- Prepare a complete conceptual plan that could be used by affected parties to determine the likely path for implementation.

Since the TIG was not formed (see Original Task 11), the contractor continued to facilitate the TCSG process to further the conceptual transmission plan for access to the Tehachapi Wind Resource Area. On April 19, 2006, the TCSG published its second and final report summarizing its findings and outlining conceptual plan alternatives and was submitted as the final Conceptual Development Plan, completing this task.

Original Task 17 (Amended Task 13), Production Simulation Studies

Initial runs of the California ISO's production simulation model were submitted to the TCSG at its September 19, 2005, meeting. These initial production simulation studies indicated that no upgrades would be necessary in PG&E's service territory other than the 500 kV line from Tehachapi to Midway. This result was also communicated to the Intermittency Analysis Project, another PIER-funded effort.

This task was to develop a prioritized list of the alternatives proposed in the conceptual plan. To do this it would have been necessary to conduct production simulation studies for all of the recommended conceptual alternatives. This would have required that these studies look at the network connections (to connect the renewable resources to the grid, going both north and south) and the network upgrades that would have made the power deliverable. Production simulations indicated the extent, costs, and benefits of congestion caused and provided a basis for prioritizing and narrowing the list of development alternatives.

The contractor discussed preliminary production cost model results with California ISO staff member Paul Steckley during November and December 2005. Production cost modeling was performed by Mr. Steckley for the alternative studied by the TCSG and reported in the Second Tehachapi Report that was submitted to the CPUC. Production cost modeling was performed by Mr. Steckley for the alternatives studied by the TCSG and reported in the second report from the TCSG to the CPUC. Remaining work was consolidated in Amended Task 14.

Original Task 18 (eliminated), Dynamic Analysis Studies

The goal of this task was to verify that the local, statewide, and western regional grids can be operated reliably with the proposed new generation and transmission connected. To do this it would have been necessary to conduct dynamic stability, voltage stability, and short-circuit analysis studies. These studies must look at both the proposed network connections and the network upgrades necessary to make the power deliverable. No work was completed on this task, and remaining work has been moved to Task 14.

Original Task 19 (Amended Task 14), Recommendation for New and Upgraded Transmission Facilities

This task was for the TIG to select which alternative(s) would be developed into complete applications for new and upgraded transmission facilities. This selection needed to be done in conjunction with the CPUC, California ISO, and the affected transmission owners.

This task incorporated the remaining work on Production Simulation (Original Task 17) and Dynamic Analysis (Original Task 18).

The second Tehachapi Report recognized that the facilities included in it would require assessment and quantification of the potential network benefits and potential operational challenges with additional assistance from the California ISO. The report recommended that

further Tehachapi transmission analysis be conducted under the auspices of the California ISO, and that the planning process also should determine which facilities of the final two phases (Phases 3 and 4) should be constructed first.

In April 2006, the California ISO initiated an effort, known as the "California ISO Southern California Regional Transmission Plan for 2006" (CSRTP), to complete technical study work related to electric grid reliability that was performed in connection with three projects proposed in Southern California, including integrating of geothermal power from the Imperial Valley and the facilities included in the Second Tehachapi Collaborative Study Group Report. This task included working with the California ISO on the CSTRP-2006. The Production Simulation Analysis and the Dynamic Analysis, which were originally to be done under Tasks 17 and 18, were completed and used here. The CSRTP-2006 process produced a plan for Tehachapi but also studied the Lake Elsinore Advanced Pumped Storage project (LEAPS) and the Sunrise Powerlink/IID Green Path (now dubbed "SunPath").

Original Task 20 (Amended Task 15), Cost Allocation

This task was to recommend how costs should be allocated for all components of the selected transmission development plans, including "renewable energy trunk lines" to connect renewable resource areas to the regional grid, any local collector system, and "gen-ties" that connect individual generating projects to the collector system. This covers who pays for the upfront costs, the generation developers or the transmission owners.

The Tehachapi Collaborative Study Group identified the cost allocation and cost recovery issues necessary for transmission investment, as documented in Chapter 7 of the Second Report of the Tehachapi Collaborative Study Group. Remaining work to resolve these issues was consolidated into Amended Task 19. This consolidation made the management and administration of the contract more efficient.

Original Task 21 (Amended Task 16), California ISO Study and Approval

This task was to ensure that transmission upgrades to connect clusters of renewable projects can be approved in advance of each generator having signed power purchase agreements or interconnection agreements. To accomplish this, the California ISO may have to amend its tariff. It may also have to revise its first-come, first-served queue process so that renewable projects that are proposed to implement the RPS are studied and approved sooner rather than later. This may also require a petition to FERC, as the California ISO queue process is based on FERC policy.

The contractor has worked with the other Tehachapi parties to build support for changing the California ISO tariff to enable the California ISO to approve transmission upgrades in advance of generator interconnection agreements. Remaining work was consolidated in Amended Task 19.

Original Task 22 (Amended Task 17), Streamlining Permitting and Review

There were three goals in this task:

1. Develop a strategy for consolidated and expedited permitting for transmission related to renewable generation. New approaches to reducing the time required for permitting may be necessary. Convene meetings of all agencies involved in reviewing the transmission project applications to determine how to do this.

2. Encourage the affected transmission owners to start the application process as soon as the new and upgraded transmission facilities have been selected. Preparation of the CPCN applications or the corresponding applications for the municipal utilities is the responsibility of these entities.

3. Facilitate expedited approval of CPCN applications with the CPUC and the corresponding applications for the municipal utilities. This includes close coordination with the CPUC and a variety of local jurisdictions so that the public process of reviewing the applications takes the least time possible.

As documented in Section 7.2.2 of the *Second Report of the Tehachapi Collaborative Study Group*, the contractor identified and proposed general ways to streamline and improve permitting for California renewable energy projects and made specific recommendations about the permitting process at the CPUC. Remaining work was consolidated with identical work from Original Task 11 and completed in Amended Task 19. This consolidation made the management and administration of the contract more efficient.

This task was to study regulatory policy and, if appropriate, recommend changes to policy and/or legislation to allow earlier acquisition of necessary ROW by the appropriate entities. The contractor discussed this issue with PG&E and SCE and discussed this issue under Amended Task 19.

Original Task 23 (eliminated), Rights of Way

This task was to study regulatory policy and, if appropriate, recommend changes to policy and/or legislation to allow earlier acquisition of necessary rights of way (ROWs) by appropriate entities.

However, the ROW for most of the route of the newly proposed projects by IID and SDG&E are already secured. The final report for this task was to summarize the issues involved in acquiring ROW in the Imperial Valley.

In meetings of the MOU Group, both BLM and the Imperial County Planning Department urged the group to identify additional transmission corridors in the region, in coordination with the California Desert Conservation Act that would look several decades into the future. The

transmission owners and generators, however, remain unenthusiastic about such an effort. As a result, it was unlikely that any of the Imperial Valley parties would attend meetings to take up this issue, as contemplated in Task 12. This in turn made it impossible to complete the Imperial Valley ROW Acquisition Report.

Given these events, corridor reservation would not help advance any of the proposed Imperial Valley transmission projects. The ROW to be acquired for each of the three proposed projects will almost certainly accommodate all the facilities needed to export to likely MW potential of Imperial Valley renewables for the next 15-20 years.

Additionally, since both the IID and SDG&E projects, announced since the inception of this contract, will largely follow existing ROW, there is no need for this task. Therefore, this Task has been eliminated, and the Permit Streamlining Report for Task 19 discussed ROW issues generally faced by renewable projects.

Original Task 24 (Amended Task 18), Purchase of Renewable Energy

The purpose of this task was to help ensure that the purchase of renewable energy supports rapid development of Tehachapi resources and that power purchasers are allowed to meet their RPS obligations with RECs.

Work under the task will be completed in Amended Task 19. Please refer to discussion there.

Original Task 25 (eliminated), Joint Operating Agreements

The purpose of this task was to determine if joint operating agreements between California ISO and the public power control areas are needed for the selected transmission development plan. If they are, then identify the principles that could underlie these agreements. Such an approach to ownership/operation shared between public power and the California ISO might provide a basis for involving LADWP in the transmission solution for Tehachapi.

The remaining work under this task will be completed under Amended Task 19.

Amended Task 19, Transmission Plan Implementation Issues

This task was to report on the implementation issues that needed to be resolved in order for the transmission identified in the Tehachapi and Imperial Valley conceptual plans to be built. Permitting and generation procurement were keys to the implementation for both projects. Cost recovery and California ISO approval were important for implementing the Tehachapi project.

Also, this task supported the third objective of this contract, to establish the institutional cooperation among federal, state, and local agencies needed for the Imperial Valley and Tehachapi transmission plans to be implemented, the generation facilities constructed, and the energy to be provided to consumers.

CPUC and Energy Commission activities underway during this contract that directly affected the issues that were being addressed by this contract are:

- CPUC: I.05-09-005, Proactive Development of Transmission.
- CPUC: R.06-02-012, Renewables Portfolio Standard.
- CPUC: R.04-04-026, RPS Procurement.
- CPUC: R.06-02-013, Long-Term Procurement Plans.
- CPUC: A.04-12-008, Antelope Transmission Projects (Tehachapi Phase 1).
- CPUC: A.05-12-014, SDG&E's application for the Sunrise Powerlink, which will be amended and filed in August 2006.
- Energy Commission: Intermittency Analysis Project.
- Energy Commission: Ongoing work in support of interstate transmission planning that may be coordinated with Tehachapi and/or Imperial Valley development.

The contractor was tasked with continuing to support these proceedings and ongoing work on behalf of the Tehachapi and Imperial Valley study groups, to ensure that the conclusions of those study groups were appropriately integrated into policies and reports. The contractor was also tasked to continue to work with other regional planning forums, such as, but not limited to the CSRTP and STEP, to ensure facilitation of integrating Tehachapi wind resources with the integrated transmission grid serving California and the Western states.

The CA RPS Permit Streamlining Report

After the publication of the *Imperial Valley Study Group Report* (September 30, 2005), the CPUC Energy Division made proposals in late March 2006 for improving the implementation of the CEQA process at the CPUC. However, the IVSG had completed its work and therefore did not have the chance to evaluate the adequacy of the Energy Division recommendations.

The CA RPS Permit Streamlining Report would provide such an evaluation from the perspective of the issues encountered during both the Imperial Valley Study Group and Tehachapi Collaborative study group processes, would recommend other steps, in addition to or instead of

those offered by the Energy Division, to organize permitting activities so that they would not unreasonably delay the combined generation and transmission development.

Additionally, the TCSG missed many opportunities to pursue planning activities related to permitting, for reasons useful to understand. The second TCSG Report (April 19, 2006) did contain some of the proposals offered by the CPUC Energy Division (in late March 2006) for improving the implementation of the CEQA process at the CPUC, but the TCSG did not have time to evaluate the adequacy of the Energy Division recommendations.

The report will also address options for consolidating permitting activities for both the generation and the transmission aspects of the overall projects; ROW acquisition considerations; and the study groups' recommendations for streamlining and accelerating the CPUC permit approval process. The report will identify stakeholder recommendations for streamlining and expediting every aspect of the permitting and approval processes.

The CA RPS Proactive Transmission Development Report

The California ISO tariff did not allow transmission facilities to be approved in advance of Interconnection Facilities Agreements. This put it at odds with the CPUC/Energy Commission initiative of proactive transmission development to access renewable resources. There was a possibility that the California ISO could work around this problem, for example, by finding RPS facilities to be "needed" for purposes conforming to its tariff, without requiring a tariff amendment.

The California ISO transmission interconnection request queue process also did not support RPS or Loading Order goals. Some RPS winning bidders were behind both thermal projects and non-winning renewables projects in the queue and may face long waits before they could bring their projects on-line. If RPS implementation was measured in terms of energy delivery, queue issues impose significant delays. Other aspects of the queue process made it difficult for many renewables projects to enter the queue early, compounding this rank-order problem and making it difficult for policy makers to judge the need for new transmission facilities.

The contractor will engage stakeholders to identify which activities, by which parties, will be necessary to remove any tariff and queue obstacles to RPS implementation.

The *Tehachapi Proactive Transmission Development Report* summarized the activities necessary to accomplish the proactive approval and construction of the transmission necessary to meet RPS goals.

In the *CA RPS Proactive Transmission Development Report* the contractor discussed issues not resolved in earlier proceedings and activities that would affect project development. For example, the CPUC's June 15, 2006, Interim Opinion (D.06-06-034) on cost recovery in I.05-09-005 attempted to clarify how the CPUC would apply the backstop cost recovery provisions of Public Utilities Code §399.25. However, in spite of this positive movement, unless other

developments were to address the remaining issues related to cost recovery by the end of this contract, further action by the CPUC and/or amendment of the California ISO tariff could still be necessary to support construction of Tehachapi transmission. These remaining actions were the basis of the final report along with suggestions for future steps toward resolution.

The contractor continued to engage stakeholders to identify which activities, by which parties, would be necessary to remove any tariff and queue obstacles to RPS implementation.

The CA RPS Purchase of Renewable Energy Report

The intent of the CPUC Tehachapi decision, and the hope of the Tehachapi and Imperial Valley study groups, was to have the development of renewables generation and the transmission to support it move forward together. But RPS procurement activities, by both IOU and POU purchasers, were not coordinated with transmission development; and power purchasers were not allowed to meet their RPS obligations with RECs.

Providing more procurement flexibility, for example, through the use of short-term contracts and unbundling RECs from power deliveries, appeared essential to achieving RPS goals on the *Energy Action Plan* schedule. Integrating procurement of renewables into the IOU Long-Term Procurement Plans might also provide a mechanism for accelerating progress toward RPS goals.

The contractor engaged stakeholders to explore consensus recommendations for ways to: (1) better coordinate RPS procurement with transmission development; and (2) accelerate and simplify IOU and POU procurement of renewables. The *CA RPS Purchase of Renewable Energy Report* presented stakeholder recommendations and outlined a schedule of the procurement activities necessary to meet RPS energy delivery goals.

The contractor was tasked with continuing to engage renewable energy generators, the IOUs, and other stakeholders to facilitate discussion for:

- Review and approval of transmission projects consistent with the recommendations of the TCSG and IVSG.
- RPS procurement that would coordinate solicitations with transmission development.
- Investigate options for engaging municipal utilities to coordinate municipal RPS procurement with Tehachapi/Imperial transmission development.
- Preparing the *CA RPS Permit Streamlining Report*, which summarized the work and considerations of both study groups on permitting issues.

  The contractor would prepare the *CA RPS Purchase of Renewable Energy Report*, which would review the current state of RPS procurement, the need to better coordinate RPS procurement with transmission development, the options for doing so, mechanisms for enhancing procurement flexibility, and options for engaging municipal utilities to coordinate their procurement with the approval of new transmission facilities. It reviewed

how California ISO/FERC queue policy affects the timing of when RPS projects can be brought on-line, and options for better coordinating procurement with the queue.

- The contractor would prepare the *CA RPS Proactive Transmission Development Report*, which would review Tehachapi cost recovery issues, including SCE's Renewable Energy Trunk Line proposal, and the recommendations of the Tehachapi Collaborative Study Group on these issues. It summarized how the costs of all Tehachapi transmission facilities proposed by the TCSG could be recovered under California statute/CPUC policies and the California ISO FERC-approved tariff. It reported on the extent to which additional actions are or may be needed, by the CPUC, the California ISO, and/or at FERC to ensure that the transmission facilities will be built. It will identify any obstacles preventing transmission to be approved in advance of generator interconnection agreements and options for removing those obstacles.

4.0 Project Outcomes

The contractor was unable to convince stakeholders of the usefulness of high-level collaborative working groups to oversee the transmission planning process and address thorny development issues (Appendices F and K). Such groups were not formed, and, as a consequence, the planning process was not as efficient as it could have been. Study group participants were primarily lower-level stakeholder staff. Transmission planning deliberations were frequently sidetracked by consideration of peripheral issues, which unnecessarily lengthened the process.

The collaborative multi-stakeholder process has been mistakenly blamed for the resulting inefficiency of the study groups. In fact, the inefficiencies were due to the lack of authority given the study group participants by their respective organizations, staffing deficiencies, and the lack of progress on peripheral issues in other venues. The facilitation provided by the contract was instrumental in keeping the parties at the table, providing suggestions for dispute resolution, engaging relevant stakeholders in the process, and promoting solutions to peripheral issues outside the study group process.

Despite the modification to the project design required to accommodate the study groups, the project achieved its ultimate goals:

- The IVSG completed the Imperial Valley *Conceptual Development Plan* and performed preliminary technical assessments (Appendices C through C-V. 4). The transmission owner, SDG&E, filed a CPCN application for the Sunrise Power Link Project with the CPUC on December 14, 2005,[34] and the California ISO accepted the project for further evaluation as part of its CSRTP-2006 process. The California ISO Board of Governors approved the project plan of service for the so-called "SunPath Project" on August 3, 2006.[35] The plan is currently undergoing environmental review at the CPUC as required by the California Environmental Quality Act (CEQA). The CPUC has ordered additional studies of alternative routes for the transmission line that might mitigate or avoid impact on Anza Borrego Desert State Park.[36]
- The TCSG submitted its initial report on Tehachapi plan alternatives and made initial recommendations to the CPUC in March 2005, prior to the initiation of this contract.[37] The TCSG continued to refine the options and began technical assessments in the

34 San Diego Gas & Electric Company. <http://www.sdge.com/sunrisepowerlink/CPUC.html>

35 For purposes of studying the effects of the Sunrise Power Link Project and IID's Green Path Transmission Project, the California ISO studied them together and named that combination the "SunPath Project."; and California ISO, Findings and Recommendation on the Sun Path Project.

36 San Diego Gas & Electric Company. CPUC/BLM Notice Regarding an Additional EIR/EIS Alternative to the Proposed Sunrise Powerlink Project.

37 Tehachapi Collaborative Study Group. *Development Plan for the Phased Expansion of Electric Power Transmission Facilities in the Tehachapi Wind Resource Area: Report of the Tehachapi Collaborative Study Group*, March 16, 2005.

following year, supported by this contract, resulting in a second report to the CPUC in April 2006 (Appendices A and B). The report recommended that the California ISO complete the technical studies and develop a final plan of service as part of the CSRTP-2006 process, which it agreed to do.[38]

- In response to a recommendation in the second TCSG report, the CPUC appointed a project manager for the overall Tehachapi project.[39]
- The Tehachapi transmission owner, SCE, filed two CPCN applications for the first three segments of the Tehachapi plan with the CPUC in December 2004.[40] A third CPCN application for the remaining segments was filed in June 2007.[41]
- The final Tehachapi plan of service was approved by the California ISO Board of Governors of Governors in January 2007.[42]
- At the urging of the study groups, the CPUC has improved the permitting process by ensuring that environmental review contractors are in place and knowledgeable about the proposed facilities by the time the CPCN applications are received.[43]
- The Tehachapi project manager is assisting the permitting process by serving as a direct link between the CPUC, the utility, and agencies involved. The Tehachapi project and is now holding weekly conference calls to discuss progress and coordinate various elements of the project.
- The adoption of PUC §399.25 backstop funding mechanism provides assurance that reasonable costs incurred in constructing network facilities approved by the CPUC but denied recovery in the FERC tariff can be recovered. However, as noted above, the CPUC has not yet done so.
- In response to a request by the California ISO that the contractors helped draft, the FERC unanimously approved a declaratory order in April 2007 endorsing the concept of a third category of transmission assets encompassing facilities needed to access locationally constrained resources to be used by multiple generators.[44] Work on a tariff filing consistent with the declaratory order is underway.[45]

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38 Tehachapi Collaborative Study Group. *Development Plan for the Phased Expansion of Electric Power Transmission Facilities in the Tehachapi Wind Resource Area: Second Report of the Tehachapi Collaborative Study Group*, April 19, 2006. See pp. 45-47

39 California Public Utilities Commission, Assigned Commissioner's Ruling, I.05-09-005, July 13, 2006, p. 7.

40 Southern California Edison Company, December 9, 2004.

41 Southern California Edison Company, June 29, 2007.

42 California Independent System Operator, January 24, 2007.

43 California Public Utilities Commission, July 13, 2006.

44 Federal Energy Regulatory Commission, April 19, 2007.

45 California Independent System Operator. Location Constrained Resource Interconnection (LCRI)

- Initial power purchase agreements are being signed between LSEs and renewable energy developers in the Tehachapi and Imperial Valley renewable resource zones.

Policy website.

5.0 Conclusions and Recommendations

Collaborative Transmission Planning Is Essential

State goals subsume but are broader than the interests of individual utility and renewable generator stakeholders involved in the transmission planning process. Participants tend to approach the process with their own interests foremost in mind. In order to ensure that the outcome of the planning process meets statewide goals, collaboration is essential. This point was discussed by several participants at an Energy Commission workshop in April 2007 acknowledged this fact.

The contractors recommend that all future planning for major transmission facilities be based on stakeholder collaborative processes.

The Collaborative Process Is Most Effective When All Stakeholders Are Well Represented

If important stakeholders are excluded from the process, refuse to participate, or are poorly represented, no genuine consensus can be developed in the collaborative process. Since these stakeholders are unlikely to relinquish their interests and rights, final plans are likely to be delayed when suitably authorized representatives finally do enter the planning and approval process.

The contractors recommend that every effort be made to involve all essential stakeholders in the collaborative process as early as possible, and that these stakeholders be represented by competent personnel with sufficient authority to make the decisions required.

Participants in the Collaborative Process Must Strive for Consensus

The most difficult feature of the collaborative process is the need to strive for consensus. To achieve consensus, participants must be willing to compromise some of their individual goals for the greater good. Not surprisingly, reaching such compromise positions is challenging and time-consuming. However, failure to do so resulted in controversial transmission plans that must be further modified, requiring additional time and generating animosity.

The contractors recommend that the CPUC, Energy Commission, California ISO, or other entities with formal authority for transmission planning be active participants in the collaborative process or at least monitor the process closely. Collaborative planning is a dynamic process that can easily be sidetracked and delayed if individual stakeholders insist that all their expectations be met. Even with professional facilitation, the voice of authority occasionally is invaluable to keep the process on track.

Participants Must Be Assured That All Relevant Issues Will Be Addressed

In order to participate productively, every stakeholder must know that its vital issues will be addressed in one forum or another. As the TCSG demonstrated, the transmission planning process becomes inefficient if participants believe that issues of vital interest are not being suitably addressed. These issues, e.g., cost recovery, need not necessarily be addressed in the transmission planning process, but if not, they must be addressed in a timely fashion in another forum.

The planning process should therefore begin with decisions about which issues will be resolved in the collaborative process and which will be resolved elsewhere. No major relevant issues should be ignored.

6.0 Benefits to California

Meeting California's renewable energy goals will require a substantial expansion of the state's electric transmission infrastructure. Decisions to do so are technically complex, and potentially controversial and require consensus from a wide variety of agencies and stakeholders. With assistance from this project, the Tehachapi and Imperial Valley study groups have completed conceptual transmission plans for two major transmission upgrades. All segments of the Antelope Transmission Project (segments 1 – 3 of Tehachapi), the Tehachapi Renewable Transmission Project (segments 4 – 11 of Tehachapi) and the Sunrise Powerlink have received CPCNs. This project has demonstrated the value of collaborative planning for transmission facilities needed to access renewable resource areas.

7.0 Monthly Accomplishments and Critical Project Reviews

September 2005

- Filed the *Development Plan for the Phased Expansion of the Transmission to Access Renewable Resources in the Imperial Valley (Imperial Valley Conceptual Development Plan)*, the Report of the Imperial Valley Study Group, with the Energy Commission on September 30, 2005, in Proceeding 04-IEP-1F. (Appendix C).
- Collected and summarized Cost Production Simulations for the *Imperial Valley Conceptual Development Plan*. (Appendix C-V. 4)
- Collected and summarized Dynamic Analysis Studies (Appendices C-V. 1, C-V. 2, C-V. 3, and C-V. 4) for the *Imperial Valley Conceptual Development Plan* in the Imperial Valley Dynamic Analysis Study (Appendix J).

October 2005

- Conducted discussions with senior-level representatives from several utilities and the California ISO about formation of an Imperial Valley Implementation Group (IVIG).
- Visited the routing of the proposed 500 kV line from Imperial Valley to San Diego under contention between IID and SDG&E to lay the groundwork for an IVIG to help advance project approvals.
- Presented the *Imperial Valley Conceptual Development Plan* at the October 28, 2005 STEP meeting in San Diego, and reviewed its status in the 2005 IEPR proceeding (Docket #04-IEP-1F) and in the CPUC Proactive Transmission Proceeding, I.05-09-005. Notified STEP that the *IVSG Conceptual Development Plan* would have to be modified to incorporate the connection to LADWP.
- Requested that the CPUC and the Energy Commission docket public review of the *Imperial Valley Conceptual Development Plan* in I.05-09-005 (CPUC) and in Docket #04-IEP-1F (2005 IEPR).
- Prepared a draft list of TIG members. Began discussions with potential members about establishment of a TIG.
- Prepared for November 2005 Tehachapi Study Group meetings.

November 2005

- Arranged public review of the *Imperial Valley Conceptual Development Plan* in CPUC proceeding I.05-09-005. A workshop for this purpose was scheduled for December 7, 2005 at the CPUC.
- Continued discussions with potential members about establishment of a TIG. Discussed formation of a joint TIG/IVIG with the CPUC.

- Prepared for and attended the November 2 and November 30 Tehachapi Study Group meetings. Prepared draft presentation for CPUC workshop scheduled for December 7. Met with the California ISO about Tehachapi transmission options.
- Discussed preliminary production cost model results with California ISO staff member Paul Steckley. Transmitted latest results to the Project Manager.

November 22, 2005: Critical Project Review (CPR #1)

An initial Conceptual Transmission Plan for the IV work was prepared and filed on September 30, 2005. The LADWP proposed a major new transmission connection that would affect the power flows and the phasing of Imperial Valley development. Three key parties, IID, LADWP, and SDG&E, were pursuing transmission initiatives separately rather than collaboratively. These recent developments necessitated the changes to the deliverables in contract tasks as outlined below.

Status of Work on Deliverables and Major Tasks

Task 2, Establish the Imperial Valley Implementation Group (IVIG) and Conduct IVIG Meetings.

The contractor formally proposed creation of the IVIG in Chapter 6 of the *Imperial Valley Conceptual Development Plan* (Appendix C). As outlined there, the IVIG would bring all stakeholders together to:

- Build public and institutional support for approval and construction of the generation and transmission development, and help overcome local opposition to such development.
- Coordinate permitting and environmental studies for the several generation and transmission components of the overall development.
- Press the case for expedited consideration and approval of each component of the development.
- Develop solutions for removing regulatory or tariff barriers to project development.
- Assist in resolving operational jurisdiction, funding or other such issues.

These potential benefits of joint action notwithstanding, at the time of this critical project review, neither IID nor SDG&E saw the need for an IVIG. Each preferred to work unilaterally on its development priorities (SDG&E Sunrise Powerlink; IID system upgrades and new connection to SDG&E at San Felipe). IID, LADWP, SDG&E, and CalEnergy agreed to form a group to coordinate the work and share the expense of preparing a programmatic EIR for the overall generation-transmission development. However, a full MOU was never

executed because serious disagreements between IID and SDG&E set in only a month after the MOU announcement. The four parties did, however, say in public on more than one occasion that they intended to pursue joint permitting for geothermal and transmission development.

IID and SDG&E were competing to build the portion of a 500 kV line in Imperial County, from the Imperial Valley (IV) substation to the San Diego County line. This line, which would then continue to San Diego as the Sunrise Powerlink, was an essential component of the Imperial Valley development plan of the IVSG. One of the key issues was whether the portion of the line in Imperial County would be in the California ISO control area, or in the IID control area. Until this issue was resolved, IID and SDG&E would be unwilling to consider formation of an IVIG.

At its October 28, 2005, meeting, STEP requested that IID/LADWP and SDG&E agree—by November 30, 2005—on a consensus plan for which entity would build the segment of 500 kV line from the Imperial Valley substation to the San Diego County line. The parties had been meeting to this end, but at the time it appeared likely to take a few more months to resolve. CEERT offered to facilitate these meetings as it was not possible to recruit members to participate in an IVIG until this issue was resolved.

Some potential TIG/IVIG members suggested that it might make sense to combine the two efforts into one "RPS Implementation Group," to oversee the coordination of procurement with transmission development and other key implementation issues. Many of the issues are similar, and the time of Commissioners and senior executives is limited.

The IVSG reported its transmission planning studies of routing alternatives at every STEP meeting starting in December 2004. In September 2005, a draft of the *IVSG Conceptual Development Plan* was sent to all 290 people/organizations on the STEP distribution list with a request for comment; several STEP participants did send in comments, which were incorporated in the final *IVSG Conceptual Development Report*, filed September 30. As a result of this monthly reporting of IVSG progress at STEP meetings and the involvement of STEP members in reviewing the *IVSG Conceptual Development Report*, all STEP participants are fully informed about the IVSG.

Further, as reported in the October 2005 MPR, some parties (at both Commissions and the IOUs) the contractor had approached about formation of an IVIG expressed the opinion that it might make more sense to have one statewide renewables implementation group (SRIG) for all development issues across the state, rather than separate groups for Tehachapi and Imperial. This concept warranted further consideration, as the contractor continued active efforts to create interest among key parties in both the IVIG and the TIG.

Task 3, Coordination with the Southwest Transmission Expansion Plan (STEP).

The contractor was successful in bringing Imperial Valley transmission development to the attention of all STEP participants. As a direct result of the contractor's work, Imperial Valley transmission planning efforts are now reviewed at every STEP meeting.

Going forward, the major Imperial Valley transmission upgrades would be integrated into western regional transmission planning through the WECC Path Rating process. Three major components of the Imperial Valley development would require WECC path ratings. The rating of Path 42 (IID-SCE) would have to be increased from 800 MW to 1,600 MW. The SDG&E 500 kV Sunrise Powerlink and the proposed LADWP Indian Hills-Upland 500 kV line would have to be designated as new paths and be given ratings. The proponent of each project was responsible for obtaining the rating; the lines cannot operate the line until they receive it. The procedure was that the proponent requested WECC to assign a rating. WECC then initiated a three-phase, formal study process and review that involved all regionally affected transmission owners/operators. The progress of these studies and the completion of each phase of the rating process would be reviewed at STEP meetings so that any stakeholder not directly involved in the transmission studies required for determining the rating would have an opportunity to understand how the proposed new facilities were being studied, and the schedule for bringing them into service. This is how STEP would "track" these proposals.

For the *Draft Imperial Valley Regional Network Upgrade Report*, due January 23, 2006, one of the pertinent regional network transmission projects was the LADWP Indian Hills-Upland 500 kV proposal. Construction of this project would significantly change the flows at several major buses in the region from the levels evaluated by the IVSG and presented in the *Imperial Valley Conceptual Development Plan*. LADWP studied the effect of its proposed project on the region, but did not provide its study data for review by other transmission entities. The contractor requested that LADWP restudy its project, including its connection to the IID system, in a regional cooperative study through the IVSG. LADWP tentatively agreed to do so. This would require the IVSG parties (principally APS, IID, LADWP, SDG&E, SCE, and the California ISO) to establish base cases, and complete power flow and dynamic stability studies (contract Task 6). This study work also would be necessary for completion of the *Draft/Final Imperial Valley Development Plan*. This study work would take several months to complete and was unlikely to begin until January 2006.

Task 4, Imperial Valley Conceptual Development Plan.

The remaining work of Task 4 was to arrange public review of this plan, and the corresponding deliverables of meeting notice, agendas, and meeting summaries (and a revised conceptual plan, if needed).

The CPUC Assigned Commissioner indicated at an all-party meeting on November 7, 2006, that she would include review of the IVSG plan in the CPUC Proceeding I.05-09-005. The contractor would continue to work with the Commissioner and the presiding ALJ to ensure that there was a properly noticed opportunity for review and comment on the IVSG conceptual plan.

Task 5, Production Simulation Studies.

The contractor arranged for the California ISO to perform production simulation studies of Imperial Valley transmission alternatives. The IVSG used these studies to rank the alternatives, and they played an important role in bringing the study group to consensus agreement on the transmission plan presented in the *IVSG Conceptual Development Plan*. Some of this work was started before the current contract, but it was completed after the current contract began on September 20, 2005. The draft and final Imperial Valley Production Simulation Study Report will explain the study methodology, present the detailed results, and explain how the results were used to prioritize the alternatives that form the basis of the IVSG consensus transmission plan.

All of the individual transmission projects that made up the *Imperial Valley Conceptual Development Plan*, and that were necessary for Imperial Valley development, had now been publicly announced by their respective proponents (Sunrise Powerlink by SDG&E; IID system upgrades by IID; and Indian Hills-Upland 500 kV by LADWP). Thus there were no more "alternatives," and so no need to rank transmission alternatives, as contemplated in the Task 5 scope of work.

Production simulations, which would include analysis of congestion, losses, and production cost, were now likely to be done by the proponents. SDG&E sponsored its own economic evaluation of the Sunrise Powerlink, and planned to announce the results of this study before the end of 2005. The California ISO would likely require an economic evaluation of the LADWP Indian Hills-Upland project before it would approve that project. Any such study would almost certainly be reported to STEP participants. At this point, it did not appear that a joint production simulation study coordinated by the IVIG would add any value.

Task 6, Dynamic Analysis Studies.

Voltage stability and disturbance-response studies were performed for the IVSG transmission alternatives in early September 2005, just before this contract began. The analysis of the study results, however, was not completed until after this contract began on September 20, 2005.

Similar studies were necessary for the LADWP Indian Hills-Upland project and the direct tie between LADWP and IID. The contractor requested that this work be done through the IVSG so that affected transmission owners could review both the data to be used and the study methodology. If LADWP agreed, the contractor would prepare and submit the *Draft and Final Imperial Valley Dynamic Analysis Study Report*, including the results with the proposed LADWP facilities in service.

There was a possibility, however, that LADWP would not agree to share its data with the IVSG transmission owners and would proceed directly to WECC path rating studies. In this case, the contractor would submit the *Draft/Final Dynamic Analysis Study Report* on the IVSG transmission alternatives, with the results of both the IID system upgrades and the Sunrise Powerlink in service, but without the LADWP Indian Hills-Upland line.

Task 7, Recommendation for New and Upgraded Transmission Facilities.

The contractor began work on a final conceptual transmission plan to access Imperial Valley renewable generation. The Indian Hills-Upland 500 kV project proposed by LADWP would significantly change power flows in the Imperial-Riverside region from those evaluated in the *IVSG Conceptual Development Plan* and might also affect the size and timing of the phases of Imperial Valley development recommended in the IVSG report. Preparation of a final Imperial Valley Development Plan would require new electrical studies and joint reconsideration of development phasing by the IVIG or the "MOU Group."

The value of updating the initial IVSG report into a final development plan would be that it puts each individual component project (generating plant, transmission line segment, etc.) into the larger context of meeting the State's renewable energy goals. This could have enabled some permitting requirements to be consolidated and approvals to be coordinated. It might have been easier to win both public and agency support for individual projects if they were understood to be essential components of a state electricity supply plan.

Several stakeholders who talked about the value of collaborating to produce the IVSG conceptual development plan (filed September 30, 2005) were now questioning the value of updating it to produce a "final" plan. They pointed out that the regional electrical studies would be done through the WECC path rating process and the development phasing determined by the signing of power purchase agreements for renewable generation. They believed that their proposed projects had matured into commercial ventures, and that they did not need the support of a regional collaborative to win the approvals necessary to finance and build them. This put their willingness to participate in preparing a final Imperial Valley Development Plan in doubt.

The progress of work over the next few months was to determine whether or not it was possible to prepare a final *Imperial Valley Development Plan* as originally contemplated.

Task 8, Cost Allocation; and Task 9, Transmission Funding.

LADWP and IID recently announced that they intended to seek merchant financing through Citizens Energy Corp. for their transmission projects. Investors in such merchant transmission financing require that the facilities be covered by a tariff approved by FERC and collected by the California ISO to guarantee repayment of the financing costs. Further, LADWP and IID proposed to the California ISO that the costs of the facilities be recovered from all users of the California ISO grid, not just from users of the LADWP and IID transmission systems—even though the facilities would be owned and operated by LADWP and IID and be in their respective control areas rather than in the California ISO control area. As part of the arrangement, Citizens Energy would rebate its investment banking fee in the form of electric-bill subsidies for low income Los Angeles and Imperial Valley ratepayers.

This approach would spread the costs of the new LADWP/IID facilities broadly and would significantly reduce the charges that LADWP and IID customers would have to pay for these new transmission assets. This could, in theory, reduce the transmission tariff that each utility would have to charge users of its system, thus helping to keep the delivered cost of renewable (and non-renewable) power transmitted across the LADWP and IID systems down.

This is, however, a controversial proposal. The California ISO ordinarily requires that all facilities included in its transmission rate base be under its operational control. Further, if the California ISO finds that the proposed facilities benefit Los Angeles and IID customers disproportionately to statewide customers, it would be unlikely to approve adding these facilities to its transmission revenue requirement. SDG&E proposed that the new LADWP and IID facilities be operated by the California ISO, and it objected that it would be improper for California ISO customers to pay for improvements to IID's internal transmission system. The competition between SDG&E and IIDI/Citizens Energy over who would build the required new line from the IV substation to the San Diego County line was very much a factor in the ongoing negotiations among the parties on these issues.

If the California ISO would not support recovering the costs of the LADWP and IID transmission facilities from statewide customers, the costs of the new transmission would be borne by the proponents and reflected in the charges each imposes for use of their transmission systems. This could have increased the cost of renewable energy transmitted across the IID and LADWP systems, perhaps substantially. If such transmission charges were high, this could limit renewable energy development in the region. High charges could also make it economic for CalEnergy to build its own interconnection with the California ISO grid, rather than connecting to the IID system.

As noted above, SDG&E and IID/Citizens Energy were competing to build the portion of the proposed 500 kV line in Imperial County from the IV substation to the San Diego County line. (This was separate from the IID system upgrades/connection to LADWP and the LADWP

Indian Hills-Upland project). If SDG&E were to build/own this 500 kV line segment, it would be operated by the California ISO, and its costs spread across all users of the California ISO. If IID/Citizens were to build/own the line, it would be operated by IID, in the IID control area, with its costs either spread across the California ISO (as proposed by IID) or borne only by users of the IID system (if the California ISO would not accept a line that did not operate in its rate base). The decision on cost recovery would also have a material effect on the delivered cost of IV renewable power available on the California ISO grid.

Differences from Original Contract: Tasks 8, 9, and 20 were added to this contract to address problems encountered by the Tehachapi Study Group in 2004. The transmission plan recommended by the IVSG avoided most of those problems, due largely to the structure of existing transmission facilities in the region and the location of renewable generators relative to those facilities. The SDG&E Sunrise Powerlink, IID internal system upgrades, and LADWP Indian Hills-Upland project were all likely to be classified by FERC and the California ISO as network upgrades, and thus would have been eligible to have their costs recovered in each entity's transmission revenue requirement. With cost recovery effectively assured, there was no need for the Imperial Valley Alternative Funding Report (Task 9). Further, because IID and LADWP elected to build their upgrades as merchant transmission projects, there was no need for an *Imperial Valley Public Power Funding Report* (Task 9). However, if the California ISO would not accept the LADWP and IID facilities into its rate base, this could make it difficult or impossible to arrange merchant financing. Those entities might then have to finance the upgrades themselves, which could affect what those entities charge for transmission access to Imperial Valley renewables.

In light of these considerations and unlike Tehachapi, the IVSG transmission plan appeared to make it possible for renewable generators located anywhere in Imperial Valley to be able to connect to the IID system without the need for "renewable energy trunk lines"—non-network EHV connections of multiple renewable generators to the grid. The cost responsibility of such non-network connections was to have been the major focus of the Imperial Valley Cost Allocation Recommendation Report in Task 8. Such a report does not appear to be needed.

IID, SDG&E, and LADWP were pursuing their proposed projects as separate commercial ventures. SDG&E and IID were in bilateral negotiations to resolve ownership/construction of the 500 kV line from IV substation to the San Diego County line; and IID/LADWP were negotiating the inclusion of their projects in the California ISO rate base with the ISO. They saw no need to involve a broader stakeholder group in these discussions and thought that doing so would be counterproductive.

Proposed Changes: Combine Task 8 and Task 9 into a new Task 8, Minimizing the Delivered Cost of Imperial Valley Power. Replace the existing deliverables with new draft/final reports, "Options for Minimizing the Delivered Cost of Imperial Valley Power."

Rationale for Proposed Changes: LADWP and IID, hoped to be able to finance their proposed initiatives as merchant transmission projects. This depended, however, on reaching accommodations with the California ISO on operational control of the facilities. If they were unable take advantage of merchant financing, they might have to finance the transmission themselves. This determination would affect the delivered cost of access to Imperial Valley renewables, and thus was of central concern to the work under this contract.

The interest of the state was in transmission solutions that support rapid development of renewables in the region, and thus in minimizing the delivered cost of power from regional generators. However, this interest might not have been a primary consideration in the commercial negotiations underway by and among LADWP, IID, and SDG&E. A report summarizing the costs of different financing arrangements, and the impact of different levels of transmission owner tariffs on the development of Imperial Valley renewables could have provided valuable information to policy makers. Such a report could have provided a statewide perspective on the implications of different financing and operational control arrangements that might have assisted the parties in making final arrangements for financing in the spring of 2006.

November 22, 2005 (CPR #4):

Summary of activities and developments concerning transmission planning for the Tehachapi Wind Resource Area

The contractor continued to play a key role in the preparation of the conceptual development plan for Tehachapi transmission. Production cost models were run for various alternatives under consideration, and capital cost estimates were expected by the end of November. The contractor worked actively with the major stakeholders to clarify the basis for the fundamental policy decisions that must be made in order to arrive at final recommendations.

The contractor also discussed with stakeholders the benefits of forming a Tehachapi Implementation Group (TIG) to guide not only the preparation of the development plan but to provide leadership to solve various financial and other policy issues required to implement the transmission plan and construct generation facilities in the Tehachapi Wind Resource Area.

The contractor discussed with the concept of establishing a Statewide Renewable Implementation Group (SRIG) with various parties and offered to facilitate the discussions in a manner similar to the Tehachapi Implementation Group (TIG) and the Imperial Valley Implementation Group (IVIG) were they to be established. No resolution of this issue was reached.

Description of progress on active tasks

Task 15

Establish Tehachapi Implementation Group (TIG) and Conduct TIG Meetings

The contractor submitted a preliminary list of suggested participants to the Commission project manager on October 20 and has met with key staff from several of the organizations to obtain additional information and recommendations. However, efforts by the contractor to institute the TIG were placed on hold for the time being due to discussion of other potential forums for addressing these issues.

The contractor maintained contacts with the various parties about establishing an SRIG. In the meantime, the contractor would continue discussions with stakeholders to convey the importance of high-level oversight by stakeholder management and would obtain recommendations for participation in the TIG (and IVIG) should these groups become necessary in the future.

Task 16

Tehachapi Conceptual Development Plan
The contractor continued to assist the TCSG. A meeting was held on November 2 at which the primary focus was on the most recent production cost modeling results performed by the California ISO. The meeting materials were delivered to the Energy Commission project manager.

The next meetings of the TCSG were scheduled for November 30 and December 19, and their focus would be to finalize the transmission facilities that would be recommended to the CPUC in the report due March 1, 2006. It had become clear that the recommendation on Tehachapi transmission facilities to be constructed would entail a policy decision that was beyond the scope of many of the TCSG participants whose expertise was engineering.

Two basic development plans were under consideration. The first option would have connected all the power generated in the Tehachapi Wind Resource Area (TWRA) to the grid at the Vincent substation in SCE's service territory. The second option consisted of lines connecting the TWRA to the Midway substation at the southern end of the PG&E system as well as to the Vincent substation. This option would effectively have created a fourth link in Path 26, which currently consisted of three lines between Midway and Vincent.

The two options were fundamentally different in nature and the choice between them involved policy decisions that were beyond the scope of many members of the TCSG. The contractor was preparing a background paper summarizing the significant differences between the two options and the basis on which the decision between them will be made in order to facilitate discussion (Appendix M).

Task 17

Production Simulation Studies
Preliminary production cost simulation studies were performed by the California ISO. The results have been discussed by the TCSG and delivered to the Energy Commission Project Manager (Appendix L). The contractor had several discussions with California ISO staff to fully understand the results and their implications for Tehachapi development. The significant results of this analysis would be discussed in the background paper that was being written by the contractor.

Tasks 18-25

The outcome of the TCSG decision on the basic options for Tehachapi transmission facilities was anticipated to have enormous implications for facility cost allocation (Task 20). Under the existing rules established by the FERC, cost recovery for one set of facilities contemplated could not occur through the general California ISO tariff since these facilities would carry almost no power from generators other than those located in Tehachapi. There was no feasible method for financing such facilities at the present time.

Facilities constructed under a different option would provide network benefits and the cost could almost certainly be recovered through the California ISO tariff under FERC rules. This option would have allowed conventional financing to be provided by the utilities. The fact that the second option could be financed conventionally while finance for the first option was difficult or impossible was likely to play a key role in the TCSG recommendation to the CPUC.

December 1, 2005 MPR

- Arranged public review of the Imperial Valley conceptual development plan in CPUC proceeding I.05-09-005. A workshop to this end was scheduled for December 7, 2005, at the CPUC.
- Continued discussions with potential members about establishment of a TIG.
- Discussed formation of a joint TIG/IVIG with various decision-makers.
- Prepared for and attended the November 2 and November 30 Tehachapi Study Group meetings and for the CPUC workshop scheduled for December 7 and discussed Tehachapi transmission options with the California ISO.
- Discussed preliminary production cost model results with California ISO staff member, Paul Steckley.

December 2005

- Conducted public review of the Imperial Valley Study Group conceptual development plan in CPUC proceeding I.05-09-005 workshop on December 7, 2005, at the CPUC.
- Continued discussions with potential members about establishment of an IVIG.

- Presented the case for forming the IVIG and some of the parties' thinking about this issue at the December 7, 2005, CPUC workshop mentioned above.
- Continued discussions with potential members about establishment of a TIG. Discussed formation of a joint TIG/IVIG with CPUC staff.
- Prepared background paper, agenda, and presented this update at the TCSG at the December 7, 2005, CPUC workshop (Appendix P).
- Prepared for and attended the December 19, 2005 Tehachapi Study Group meeting.

January 2006

- Held discussions with SDG&E and IID preliminary to establishing an IVIG.
- At the January 24 STEP meeting, made a presentation making the case for an IVIG; reviewed progress on IID, LADWP, SDG&E, and LEAPS transmission projects.
- Reviewed opposition to the SDG&E Sunrise CPCN application filed by IID and other interveners, and opposition to the LEAPS (Lake Elsinore Advanced Pumped Storage) filing at FERC by SDG&E and the California ISO.
- Reviewed WECC Progress Reports and Regional Review Group meetings on the IID-LADWP Green Path transmission projects.
- Continued discussions with PG&E and SCE about establishment of a TIG.
- Continued work on the Tehachapi conceptual development plan. Convened meetings to develop cost estimates for a Tehachapi-Midway connection.
- Developed spreadsheets outlining the total cost of Tehachapi alternatives. (Appendix P)
- Drafted the executive summary of the TCSG report.
- Proposed a new approach for scheduling the later phases of Tehachapi development.
- Critiqued an analysis of Path 26 flows developed primarily by PG&E (Appendix O).
- Prepared/developed agenda for and attended the January 26 TCSG meeting at PG&E.
- Continued analysis of connection alternatives for the later phases of Tehachapi development based on production simulation results produced by the California ISO (Appendix V).

February 2006

- Worked with SDG&E, IID, and LADWP to help maintain momentum for development of their proposed transmission upgrades and to encourage cooperation among the parties.
- Monitored the WECC Regional Review Group process for the LA Green Path and IID IV-San Felipe project proposals.

- Continued discussions with PG&E, SCE, and the CPUC about establishment of a collaborative forum to advance Tehachapi development.
- Prepared for and attended the Tehachapi Study Group meeting on February 13. Revised the Executive Summary and other sections of the draft TCSG report. On behalf of the TCSG, requested CPUC approval to submit the TCSG report on April 7 instead of March 1, 2006. Initiated discussions with the CPUC and California ISO regarding moving remaining transmission planning studies to the California ISO.
- Continued work on cost recovery issues for Tehachapi development, including preparation of a presentation for the CPUC all-party meeting on these issues in I.05-09-005.
- Continued work on RPS procurement issues as they affect Tehachapi and Imperial Valley development.

February 10, 2006, CPR #3

Current Status of Imperial Valley Transmission Development Activities

Major activities since the last CPR report under this contract include:

- SDG&E filed (December 15, 2005) the Purpose and Need Determination section of its CPCN application for the Sunrise Powerlink.
- Opposition to SDG&E's application was filed by IID, the Utility Consumers Action Network (UCAN), environmental groups, and landowners. UCAN argued, among other things, that utilities should not be allowed to separate the environmental studies of proposed projects from the Need Determination portion of their CPCN applications.
- In response to the opposition to the Sunrise CPCN application, the CPUC scheduled public hearings on the project and held the first of these on January 31 in Ramona (central San Diego County).
- IID announced, in its opposition filing, its new plan to build a 500 kV line into central San Diego, in direct competition with the Sunrise Powerlink.
- IID and LADWP initiated the WECC Regional Review Group planning process for the Coordinated Green Path Projects and held the first two meetings required under this process. The Coordinated Green Path Projects include upgrades of IID's internal system; the Imperial Valley Substation-San Felipe-central San Diego 500 kV project; and the LADWP Indian Hills-Upland 500 kV project, which would connect the LADWP system to the IID system at Indian Hills, and to the Devers-Palo Verde #2 line.
- The Lake Elsinore Advanced Pumped Storage Project (LEAPS) received a license to operate a hydroelectric plant from FERC and applied to FERC for a tariff for the transmission portion of this project. This project would connect the SDG&E and SCE systems in northern San Diego County-southern Orange County. It could complement the Sunrise Powerlink, which as currently planned does not connect the SDG&E and

SCE systems. But the LEAPS and Sunrise projects may not both be approved. The California ISO has not determined that the LEAPS project is needed and filed opposition to the LEAPS tariff request at FERC, as did SDG&E.

- Glenn Steiger resigned as manager of IID Energy. He conceived and led IID's Green Path transmission development plan, IID's participation in the Imperial Valley Study Group, and its transmission development agreement with LADWP. IID appointed a new general manager, Charles Hoskins, in January 2006.

Review of Work on Tasks 2-14

Task 2, Establish the Imperial Valley Implementation Group (IVIG) and Conduct IVIG Meetings.

With the heightened competition between IID and SDG&E over construction of the 500 kV transmission line that would interconnect their systems, the parties became unwilling to discuss establishment of or collaboration in an IVIG. They were focused primarily on bilateral negotiations. But efforts to form an IVIG could still play a useful role in resolving the issues in contention, precisely by promoting renewable energy export as a shared—and statewide—concern that would bear directly on approval of all new facilities in the region.

The new IID general manager was unfamiliar with the history of cooperation on the IVSG and with efforts to form an IVIG. There were indications that he might consider pulling IID back from its plan to build transmission in SDG&E territory. If IID and SDG&E were able to agree on construction of the 500 kV line, this could have restarted efforts to form an IVIG. It also made sense to continue discussions with the CPUC and utilities about forming one statewide renewables/transmission implementation group, rather than separate IVIG and TIG groups.

The contractor planned to continue regular meetings with SDG&E, IID, LADWP, and renewables generators to promote multi-party collaboration to help resolve contentious issues. The Commission scheduled a new, third CPR report for May 8 and corresponding CPR meeting for May 22, 2006, at which time the Energy Commission contract manager and the contractor re-evaluated IVIG formation efforts. The following deliverables were rescheduled until after such new CPR meeting as a result of this change: final list of IVIG members; copies of letters of acceptance submitted by each IVIG member; draft and final IVIG meeting schedules.

Overview of Tasks 3-7

As the contractor, IID, and SDG&E each explained at the December 7, 2005, CPUC workshop on transmission planning for renewables (in I.05-09-005), conceptual transmission planning for the export of 2,000 MW of renewables from the Imperial Valley was completed. Each transmission owner was now pursuing the development and approval of the major components of the IVSG plan in the WECC path rating and CPUC approval processes. As a result, the work under this contract shifted from conceptual transmission planning to the policy issues that affected project approvals.

More specifically, Contract Objective #2 was achieved ("Provide a complete and comprehensive conceptual plan for the Imperial Valley that will allow approximately 2,000 MW of geothermal power generated in the Imperial Valley area to reach load centers in California").

The Imperial Valley portion of this contract now turned to Contract Objective #3: "Establish the institutional cooperation among federal, state and local agencies needed for these transmission plans to be implemented, the generation facilities constructed, and the energy to be provided to consumers."

Task 3, Coordination with the Southwest Transmission Expansion Plan (STEP).

The contractor successfully integrated Imperial Valley export planning with STEP, and, with the IVSG, created a cooperative process in which STEP members did in fact "study the addition of Imperial Valley power to the regional grid in a coordinated fashion," as specified in Contract Task #3.

To conclude work on Task 3, the contractor prepared to submit the *Draft Imperial Valley Regional Network Upgrade Report*, which would outline the status of all pertinent components of transmission development as they stood in February 2006.

Task 4, Imperial Valley Conceptual Development Plan.

With this second CPR report and the CPR #2 meeting scheduled for February 24, 2006, work on Task 4 was completed. This Task 4 transmittal report summarized public review of the IVSG Conceptual Development Plan in a CPUC workshop on December 7, 2005, and the corresponding deliverables of meeting notice, agenda, and summary of that meeting.

Task 5, Production Simulation Studies.

The production simulations required in Task 5 were completed, and were used in the IVSG to prioritize export alternatives, as specified in the contract. The contractor prepared to summarize this process, and to present the detailed simulation study results, in the *Draft Imperial Valley Production Simulation Study Report.*

Task 6, Dynamic Analysis Studies.

The contractor coordinated dynamic analysis studies among the affected transmission owners, and facilitated agreement on the data to be used in these studies. These studies were now complete. The contractor prepared to summarize these studies and present the detailed study results and conclusions in the *Draft Imperial Valley Dynamic Analysis Study Report*.

Task 7, Recommendation for New and Upgraded Transmission Facilities.

CPR Report #1 raised the possibility that it might prove impossible to update the *IVSG Conceptual Development Plan* to produce a final export recommendation, and recommended reevaluating this situation in CPR #2.

The new, hostile competition between IID/LADWP and SDG&E over the 500 kV facilities from the Imperial Valley into San Diego made it highly unlikely that any updated plan could be produced. More important, with each transmission owner pursuing approval for specific projects, such a "final" conceptual plan would do nothing to advance transmission development in the region.

The purpose of Task 7 was to select the alternatives to be developed into complete applications for new and upgraded transmission facilities. The parties made this selection, due in substantial part to the work of the IVSG, as coordinated under this contract. As noted above, all conceptual-level planning for new transmission in the region has been completed.

The contractor therefore requested that two of the Task 7 deliverables, the *Draft and Final Imperial Valley Development Plans*, be dropped from the contract, and that the work hours/budget dollars associated with these deliverables be moved from Task 7 to Task 2. Doing so would provide the contractor more flexibility to work with the parties to pursue cooperative resolution of problems threatening approval and financing of the new transmission.

The sole remaining deliverable in Task 7 would then be a final CPR report and meeting. Task 7 identified this as CPR #3. In light of the contractor's request (in the review of Task 2 above) to schedule an additional interim CPR report/meeting for mid-May, this final CPR report/meeting might be re-numbered as CPR #7; the dates would remain as scheduled in Task 7: CPR report, June 21, 2006 and CPR meeting July 21, 2006. This final CPR report/meeting would provide the opportunity for reflection on and summary of work under this contract, and identification of follow-up work necessary to support expedited approval and construction of the new transmission facilities.

Task 8, Cost Allocation; and Task 9, Transmission Funding.

Tasks 8 and 9 were combined into new Task 8, Minimizing the Delivered Cost of Power, per the contractor's request and the Energy Commission contract manager's assent. These agreements were reflected in the contract amendment of August, 2006.

Task 10, California ISO Study and Approval.

None of the Imperial Valley transmission projects would require California ISO study or approval in advance of generator interconnection requests. The work contemplated in Task 10 thus would have served no purpose. The contractor accordingly requested (by memo of January 4, 2006) and the Energy Commission contract manager agreed (January 25, 2006) that the Task 10 deliverables be dropped from the contract, and that the work hours/budget dollars

associated with these deliverables be moved to Task 21 (California ISO Study and Approval of Tehachapi Transmission Facilities). This would enable the contractor to concentrate its efforts to help resolve the difficult policy issues involved with approving transmission development in advance of interconnection agreements. These agreements were reflected in the contract amendment of August 2006.

Task 11, Streamlining Permitting and Review.

The contractor:

- Convened meetings of agencies involved in reviewing the proposed Imperial Valley transmission projects to develop a strategy for consolidating and expediting permitting.
- Encouraged the affected transmission owners to start the application process as soon as routes were selected.

To this end, IID, LADWP, CalEnergy, and SDG&E agreed to form a group to coordinate and share the costs of environmental study and other permitting work for the individual IID, LADWP, and SDG&E transmission projects. This work would have included active involvement of county, state, and federal agencies affected by or having responsibility for any aspect of the three projects and associated renewables generation. With new competition between IID and SDG&E over construction of the Imperial Valley-San Diego 500 kV facilities, the MOU Group was in suspense. The parties believed, however, that the MOU Group would take up its work as soon as IID and SDG&E resolve ownership and construction of that line. Meanwhile, SDG&E submitted a "bifurcated" CPCN application for the proposed Sunrise Powerlink in a deliberate attempt to expedite approval of those facilities. However, a full MOU was never executed because serious disagreements between IID and SDG&E set in only a month after the MOU announcement.

The *Draft and Final Imperial Valley Streamlined Permitting and Review Report* was planned to summarize the Imperial Valley parties' ideas and experience for improving the permitting process for both renewables generation and transmission. The work of the Imperial Valley MOU Group to date and the public and regulatory response to SDG&E's bifurcated CPCN filing was expected to provide a sufficient basis for completing these reports, even if the MOU Group did not continue its work later in the spring.

Task 12, Rights of Way.

It appeared that corridor reservation would not help advance any of the proposed Imperial Valley transmission projects. The ROW to be acquired for each of the three proposed projects would almost certainly accommodate all the facilities needed to export to likely MW potential of Imperial Valley renewables for the next 15-20 years.

In meetings of the MOU Group, both BLM and the Imperial County Planning Department urged the group to identify additional transmission corridors in the region, in coordination with

the California Desert Conservation Act that would look several decades into the future. The transmission owners and generators, however, remained unenthusiastic about such an effort. As a result, it was unlikely that any of the Imperial Valley parties would attend meetings to take up this issue, as contemplated in Task 12, which would, in turn, make it impossible to complete the Imperial Valley ROW Acquisition Report.

The contractor proposed to include a summary of the Imperial Valley parties' consideration of ROW acquisition issues as a section of the Task 11 deliverable, *Imperial Valley Streamlined Permitting and Review Report*.

February 2006, CPR # 5

1. The evolving Tehachapi transmission development process

Efforts to resolve the issues related to Tehachapi transmission development evolved into processes that were considerably more interrelated than initially expected when this project began. Development plans depended strongly on how cost recovery issues were to be resolved, for example. Transmission plans emerged one segment at a time as other issues were addressed, rather than as one grand plan.

The Tehachapi transmission development process continued to move forward, but in quite a different manner than initially envisioned. The contractor continued to play a key role in facilitating consensus among the parties in all the venues in which decisions were being made. However, the contractor was spending considerable amounts of time communicating with the parties individually to resolve differences of opinion, as well as facilitating meetings and email discussions. Understanding how the various pieces of the process fit together required increasingly more time and effort.

The process was expected to continue to evolve, as discussed below, and continued flexibility was required from the contractor to respond effectively to developments as they occurred.

2. Current Status of Tehachapi Transmission Development Activities

The CPUC failed to hire its environmental contractors to undertake "spring bloom" biological studies for two of the segments of the Tehachapi transmission system that were submitted for approval. It was feared that the necessary studies could not be undertaken in 2006 and that final approval for these projects would be delayed until 2007. Nevertheless, planning for subsequent projects continued unabated.

The Tehachapi Collaborative Study Group (TCSG) received initial results of production cost simulations for Tehachapi transmission alternatives from the California ISO together with construction cost estimates. Based on this information, the TCSG narrowed its consideration of projects to be constructed as the second Tehachapi connection to two options.

The TCSG discussed the network benefits of the two remaining alternatives with limited progress. The contractor discussed the status of these discussions with CPUC staff and advised them that the TCSG would not be able to provide a recommendation for the second Tehachapi connection in its upcoming report to the CPUC by the March 1 deadline. Consequently, the Assigned Commissioner Dian Grueneich delayed the deadline for the TSCG report.

On December 23, 2005, SCE submitted an advice letter to the CPUC that requested the establishment of a memorandum account to track expenses related to Tehachapi transmission and facilities other studies. A resolution by the CPUC to this effect also was requested. On February 1, 2006, the CPUC issued a draft resolution with a six-day comment period. Key transmission cost recovery issues were raised by the advice letter, by the draft resolution and by those commenting.

In a separate proceeding, I05-09-005, the CPUC requested opening briefs on cost recovery issues related to the "backstop funding mechanism" established in PUC §399.25 for costs not recovered through the California ISO tariff. Briefs from the various parties were filed and had much in common, although some differences of opinion existed, as expected. The contractor was asked by PG&E and SCE to participate in discussions intended to facilitate development of a consensus position on these issues, and the contractor agreed. According to the CPUC schedule, a ruling on cost recovery issues was expected in May 2006.

3. Review of Work on Tasks 15–25

Task 15 – Tehachapi Implementation Group
Parties to the Tehachapi transmission process elected not to work as a coherent implementation group as envisioned by the contract. Instead, informal discussions and agreements occurred between the parties. The contractor was thoroughly engaged in these discussions. However, the process as evolved was less efficient and requires a larger commitment of time and effort than would have been needed if the Tehachapi Implementation Group had been formed.

Since formation of a TIG appeared increasingly unlikely, the contractor requested that some time now allotted to this task be made available for other tasks dealing the various issues that would have been dealt with by the TIG had it been established.

Tasks 16 and 19—Tehachapi transmission plans

As of March 2005, the TCSG had developed an outline of a comprehensive plan for Tehachapi transmission facilities, as described in its report to the CPUC. Subsequently, SCE filed applications to the CPUC to move forward with facilities described in Phase 1 outlined in this report. Inexplicably, by February 2006 no application had been made for Phase 2 facilities. However, rather than completing a comprehensive plan as envisioned in Task 16, the TCSG chose to focus its efforts for the time being on making a final recommendation for Phase 3

transmission facilities, part of the work envisioned in Task 19. Study of potential Phase 4 facilities was expected to continue.

Because the TCSG was providing recommendations on individual phases rather than completing a single unified conceptual plan, the contract's division of planning efforts into "conceptual plans" and "final development plans" (Tasks 16 and 19) was no longer appropriate. The contractor recommended that these tasks be combined into a single facilities planning task.

Tasks 17 and 18—Production Simulation and Dynamic Analysis Studies

Paul Steckley of the California ISO provided the TCSG with production cost simulation studies for the wide range of facilities considered for Phase 3 of Tehachapi development in conjunction with facilities already planned for Phases 1 and 2. The contractor discussed the results of these studies with Steckley at considerable length. The TCSG relied on them to eliminate all but two of the options considered for Phase 3 development. A written account will be included in the TCSG's next report. Production cost simulations for facilities considered for Phase 4 will await a decision on Phase 3.

Task 20—Cost Allocation

Cost allocation issues arose during discussions of the facilities considered for Phase 3 development. The contractor presented a summary of these issues to a workshop held by the CPUC in December. These issues had not been resolved and were a major reason that a recommendation on Phase 3 facilities had not yet been made.

One alternative was to construct a line from Tehachapi to the PG&E substation at Midway. Together with Phase 1 and 2 facilities, this option would have completed a fourth connection between Midway and the SCE Vincent substation and increase SCE's import capacity and supply reliability.

The second alternative was to construct a second line between Tehachapi and Vincent in parallel with the Tehachapi-Antelope-Vincent lines in Phase 1. This line would have provided access to Tehachapi power but did not otherwise increase network benefits. This alternative was expected to be somewhat less costly than Alternative 1.

Because Alternative 1 provided for flows of system power when Tehachapi generation was low, it would have been appropriate for some fraction of this cost to be recovered through the California ISO tariff. Last year, the FERC ruled that costs for lines such as Alternative 2 were not eligible for allocation to the ISO. This difference in cost allocation had therefore become a major issue, perhaps the major issue in a decision between the two alternatives.

There was an additional cost allocation decision to be made by the CPUC. Pursuant to state legislation, costs for renewable transmission facilities that cannot be recovered from the

California ISO or from generators could be allocated to retail customers by means of a "backstop" mechanism. On December 23, 2005, SCE filed a request to the CPUC for authority to track expenditures and for these costs to be eligible for recovery through the backstop mechanism. Parts of the request were opposed by some parties. The CPUC issued a draft resolution that would grant much of SCE's request but also added some directives which SCE criticized. A final resolution was expected to be adopted by the CPUC on February 16. The contractor discussed the issues individually with all the parties in an effort to obtain consensus on the resolution and avoid further delays.

The CPUC also instituted an investigation into cost recovery issues as part of I.05-09-005, to which the contractor is a party. Initial briefs were submitted February 6. A decision on these issues was scheduled for May, 2006. The contractor was asked by both SCE and PG&E to participate in a group seeking to fashion a consensus position, and the contractor agreed.

Cost recovery issues were identified as the single most important issue to be resolved as part of the transmission planning process. It was expected that contractor's participation in these discussions would require an augmentation of the time currently allotted to Task 20.

Task 21—California ISO Study and Approval

Whether or not the California ISO was likely to approve a transmission project for inclusion in the California ISO tariff played an important role in the planning process. However, not until a request for approval of a particular project was submitted to the California ISO was a determination to be made. The contractor advised the CPUC and the California ISO that the latter's involvement earlier in the planning process would streamline decision-making and accelerated the process.

To date no Tehachapi transmission projects other than individual project interconnections had submitted to the California ISO for approval.

Tasks 22, 23, 24—Permitting, Rights-of-Way, and Energy Purchasing

The TCSG recommended that the permit process be streamlined by having CPUC staff hire their environmental consultants prior to submission of an application for a CPCN. Unfortunately, this was not done prior to CPCN applications for Segments 2 and 3 of Phase 1. The CPUC recognized that this was a serious mistake and indicated that contractors would be hired in a timely fashion in the future.

Task 25—Joint Operating Agreements (JOA)

No JOAs between public and private utilities were required by Phases 1-3 of the Tehachapi transmission plan. Depending on facilities proposed for Phase 4, a JOA might have been desirable. None had been considered to date, however.

March 2006

- Worked with SDG&E and IID to help resolve issues surrounding which entity would build, own and operate different sections of the 500 kV connection from the Imperial Valley to San Diego. The parties signed a memorandum of agreement (MOA) settling these issues on March 16. Prepared the *Imperial Valley Network Upgrade Report*. (Appendix G)
- Continued discussions with PG&E, SCE, and the CPUC about cooperation among major parties on Tehachapi development. These discussions focused on cost recovery, the CPUC permit approval process, the CPUC procurement process, and moving further transmission study to the California ISO.
- Prepared for and attended the Tehachapi Study Group meeting on March 13. Drafted, edited, and reviewed party comments on all sections of the draft TCSG report.
- Pursued discussions with the California ISO on moving remaining transmission planning studies to the California ISO.
- Continued work on cost recovery issues for Tehachapi development. Presented Tehachapi and Imperial Valley updates on these issues at the March 1 CPUC all-party meeting in I.05-09-005.
- Continued work on RPS procurement issues as they affect Tehachapi and Imperial Valley development.

April 2006

- Held discussions with IID and SDG&E about the permitting and approval of their projects. Concluded that it would be impossible to form an Imperial Valley Implementation Group for the foreseeable future, and submitted the *Establish the Imperial Valley Implementation Group Report* (Appendix F).
- Prepared and submitted the *Imperial Valley Regional Network Upgrade Report* (Appendix G).
- Prepared and submitted the *Imperial Valley Dynamic Analysis Study Report* (Appendix J).
- Submitted the *Development Plan for the Phased Expansion of Electric Power Transmission Facilities in the Tehachapi Wind Resource Area: Second Report of the Tehachapi Collaborative Study Group* (Appendices A and B).
- Prepared for and attended the Tehachapi Study Group meeting on April 6-7. Prepared final edits of the Tehachapi Study Group's Second Report (Appendices A and B) and revised conceptual transmission plan. Filed this plan with the CPUC on April 19.
- Prepared a presentation to the California ISO California South Regional Transmission Planning group (CSRTP-2006) on the status of transmission plans for Tehachapi. Prepared for and attended the initial meetings at the California ISO on the design of the

studies that will be undertaken there this summer, including studies of Tehachapi, the SDG&E/IID "SunPath," and the Lake Elsinore Advanced Pumped Storage (LEAPS) project.

- Continued work on cost recovery issues for Tehachapi development; discussed issues and strategy with CPUC staff.
- Continued work on RPS procurement issues as they affect Tehachapi and Imperial Valley development.

May 2006

- Prepared for and participated in the CSRTP-2006 analysis of Tehachapi and Imperial Valley transmission projects. Held discussions with Western Wind Energy, a Tehachapi wind project developer having a PPA with SCE, about including the Sagebrush Line as part of the Tehachapi export solution; and proposed that the California ISO include the Sagebrush line in its current study.
- Discussed the CPUC Draft Decision *"Opinion on Procedures to Implement the Cost Recovery Provisions of Public Utilities Code Section 399.25"* on cost recovery issues with TCSG parties and CPUC staff.
- Explored key parties' support for developing a new renewable energy trunk line tariff amendment filing by the California ISO.
- Reviewed and prepared comments on the "CPUC White Paper on Renewable Energy Certificates and the California Renewables Portfolio Standard Program"[46] as a mechanism for RPS procurement flexibility, for CPUC staff. Reviewed the PG&E, SCE and SDG&E 2006 RPS procurement plans.
- Held discussions with SDG&E about routing alternatives for its proposed Sunrise Powerlink Transmission Project (A.05-12-014).

May 8, 2006, CPR #3

Key Events Affecting the Project Since the Last CPR

- SDG&E and IID signed an MOA (March 20, 2006) to cooperate on the construction of a 500 kV line from the Imperial Valley to central San Diego County, which ended their hostile competition over who would build the line. The agreement specified that the line will be operated by the California ISO, thus resolving another major point of contention.

46 < http://www.cpuc.ca.gov/published/Report/55606.htm >

- SDG&E informed the CPUC (March 21, 2006) that it would submit a revised CPCN application for the Sunrise Powerlink, in summer 2006, to reflect this agreement with IID and to include a definitive routing for the line.
- The California ISO initiated a new regional planning process in which it would study the proposed IID-SDG&E 500 kV line (dubbed the SunPath by the California ISO), in combination with the proposed Tehachapi and the LEAPS pumped storage projects. This study is intended to support the determination of the need for these facilities.
- LADWP informed the WECC that it would change its proposed plan of service for its Indian Hills-Upland 500 kV project, such that it would no longer connect to the IID system. Instead, LADWP proposed a new 500 kV line from the Devers substation to the existing Victorville substation.

Developments Preventing Formation of an IVIG

The major new facilities proposed by the IVSG plan were a 500 kV line from the Imperial Valley substation near El Centro to central San Diego County and associated substations. SDG&E indicated its interest in building this line during the study group process; IID also indicated interest in building the Imperial County portion of such a line.

One month after the IVSG completed its conceptual transmission plan, IID, LADWP, and Citizens Energy Corporation (the Green Path parties) submitted a proposal to the WECC path rating process for this line, without any role for SDG&E in the project. The Green Path parties further proposed that all California ISO ratepayers should pay for the new facilities, even though they would be operated by LADWP and IID and not be part of the California ISO control area. This began a hostile competition between SDG&E and the Green Path parties as to who would build the line. SDG&E then filed the initial portion of its CPCN application for the Sunrise Powerlink at the CPUC on December 14, 2005.

Given this hostile competition, the key parties were unwilling to consider working cooperatively in a forum like the proposed IVIG. Meanwhile, each party worked separately to further define its proposed project and advance it in the permitting and approval process.

On March 20, 2006, SDG&E and IID announced that they had negotiated an agreement to cooperate on the construction of the 500 kV line. SDG&E also informed the CPUC that it would amend and re-file (in summer 2006) its application for its proposed Sunrise Powerlink to reflect this new agreement. IID informed the WECC that it would cooperate with SDG&E in seeking a path rating for the line from Imperial Valley to central San Diego County.

While this agreement resolved most of the hostilities between IID/LADWP/Citizens and SDG&E, each party began pursuing the permitting of its respective segments of the overall line. They did not think that an IVIG would help them with this process. Meanwhile, the California ISO began a new study process to evaluate the need for, and benefits of, the proposed Imperial Valley transmission (in combination with the proposed new Tehachapi transmission). This

process involved SDG&E, IID, SCE and the California ISO working closely together. This California ISO process entailed some of the cooperative interaction (on planning issues) that this contract envisioned being provided by an IVIG.

This California ISO process also made heavy demands on the staff time of the key Imperial (and Tehachapi) parties. It was scheduled to continue at least to September 2006, with additional work required for the remainder of 2006. SCE, SDG&E, and PG&E expressed great concern about the resource demands imposed by the (Tehachapi and Imperial) Study Group processes. The new California ISO process and the utility staff time required to support proceedings related to the Tehachapi and Imperial projects (e.g., I. 05-09-005, R06-02-012 and each IOU's CPCN applications) combined to make them unwilling to consider formation of an IVIG. The contractor submitted a final report (Appendix F) for this task.

Eliminate Task 8, Minimizing the Delivered Cost of Imperial Valley Power

The contractor could perform no useful role in influencing the transmission tariffs to be associated with the proposed new transmission facilities, and the contractor proposed that it be eliminated.

This task was revised after the first CPR meeting to address concerns that IID could use its ability to impose high transmission charges for renewables connecting to its system as leverage in its competition with SDG&E and the California ISO to build and operate the 500 kV facilities from Imperial Valley to San Diego; high tariff charges would make Imperial Valley renewables too expensive to procure.

Now that IID and SDG&E have agreed to cooperate on the construction of these facilities, and agreed that the California ISO will operate them, this concern has been largely eliminated.[47]

IID has not yet established the tariff it will charge renewables for connecting to its system, and will not be able to do so until its new system upgrades are built and it knows the final cost of those upgrades. The first of its system upgrades will most likely not be completed for 24 months, well after the time frame of this contract. IID was unwilling to disclose any indication of the magnitude or commercial terms of its tariff for its upgraded facilities to the contractor. Without tariff information from IID, the contractor could not prepare the report designated as the deliverable for this task.

For renewables generators connecting directly to the SunPath 500 kV line, the California ISO tariff was known and transparently determined; there was no role for the contractor in the California ISO tariff process.

47 http://www.greenpath.us/e1.htm: "IID Energy Agrees to Coordinate Green Path With SDG&E's Sunrise Powerlink Project," (10/22/2007).

Proposed New Contract Language to Combine Imperial Valley and Tehachapi Tasks

At the request of the contract officer, the contractor submitted language to revise the contract scope of work. This language would support new work in other regional forums to further the project goals. This revised language did not affect the overall goals of the contract.

May 8, 2006, CPR #6

Current Status of Tehachapi Transmission Development Activities

On April 19 the TCSG filed its second report on transmission facilities needed for the Tehachapi Wind Resource Area (Appendices A and B). This report further examined issues related to various interconnection options but, like the first report, failed to provide a definitive transmission plan for Tehachapi. The TCSG decided that remaining issues required analysis by the California ISO and recommended that the California ISO complete the Tehachapi transmission plan.

The California ISO began this analysis together with study of the "Sunrise Powerlink" and the "Green Path" (and they dubbed the combination the "SunPath Project") proposed by SDG&E and IID, respectively, and LEAPS. The primary Tehachapi interconnection configuration that was being studied by the California ISO was a modification of the TCSG "Expanded Path 26" option which, in addition to providing connections to connect 4,500 MW of new Tehachapi wind power, would expand the capacity of existing Path 26.

The California ISO intended to complete its analysis of all three projects during the summer of 2006 and make a recommendation to the California ISO directors in the fall. The contractor assisted California ISO planning teams with their analysis.

Review of Work on Tasks 15—25

Task 15—Tehachapi Implementation Group

Formation of a TIG with oversight of all the tasks related to Tehachapi now appeared unlikely, and the contractor submitted a final report on this work (Appendix K).

Tasks 16 Through 19—Tehachapi Transmission Plans

The second TCSG was to be considered the completed Tehachapi conceptual plan. The analysis that by this time was underway at the California ISO would complete the plan as contemplated in this contract. A thorough dynamic analysis and production simulations of all alternatives will be done as part of the California ISO process. The final report should be completed in the fall of 2006.

At the request of the Energy Commission contract manager, the contractor submitted language to revise the contract scope of work for Tasks 17-19. This language supported new work in other

regional forums to further the project goals. This revised language did not affect the overall goals of the contract.

Tasks 20 through 25

The revised scope of work proposed to combine these remaining tasks, together with similar related tasks relating to the Imperial transmission planning, into a single task. To date, the stakeholder groups and discussion venues that will be involved have not been identified.

June 2006

- Prepared for and participated in the California ISO CSRTP-2006 analysis of Tehachapi and Imperial Valley transmission projects.
- Discussed CPUC Decision D.06-06-034 on backstop cost recovery with stakeholders to determine need for a California ISO tariff amendment allowing recovery of trunk line costs in transmission rates.
- Reviewed the California ISO white paper on treatment of transmission facilities for renewable generators and discussed a tariff amendment filing with stakeholders.[48]
- Discussed procurement flexibility mechanisms, including short-term contracts and RECs, with stakeholders.
- Held discussions with environmental groups and SDG&E about routing alternatives for the proposed IID-SDG&E Green Path-Sunrise Powerlink.

July 2006

- Prepared for and participated in the California CSRTP-2006 analysis of Tehachapi and Imperial Valley transmission projects.
- Participated in the July 24, 2006, STEP meeting.
- Participated in the joint Energy Commission-CPUC mid-course review of the RPS process.
- Continued stakeholder discussions on procurement flexibility mechanisms, including short-term contracts and RECs.
- Continued work with the California ISO and other stakeholders to explore a renewable energy trunk line tariff amendment filing by the California ISO.
- Monitored IID, SDG&E, and LADWP transmission development activities that could affect export of renewables from the Imperial Valley.

48 California Independent System Operator, June 28, 2006.

- Monitored regional transmission development initiatives that could affect California RPS implementation.
- Continued stakeholder discussions of CPUC backstop cost recovery provisions.
- Continued discussions about routing alternatives for the proposed IID-SDG&E Green Path-Sunrise Powerlink.

August 2006

- Prepared for and participated in the California ISO CSRTP-2006 analysis of Tehachapi and Imperial Valley transmission projects, including California ISO Board of Governors meeting on August 3 (Appendices V and X).[49]
- Continued stakeholder discussions of alternatives to use of TRCRs in RPS bid evaluation, on backstop cost recovery, on implementation of TCSG recommendations, and other issues identified in the July 13, 2006, ACR in I.05-09-005.
- Continued stakeholder discussions to clarify and expedite the phasing of Tehachapi development; helped produce agreement on a plan of service for this development.
- Made a presentation to the joint CPUC/California ISO workshop (Appendix W).
- Continued work with the California ISO and other stakeholders to explore a renewable energy trunk line tariff amendment filing by the California ISO.
- Monitored IID, SDG&E, and LADWP transmission development activities that could affect export of renewables from the Imperial Valley.
- Monitored regional transmission planning initiatives that could affect California RPS implementation.

September 2006

- Prepared for and participated in the California ISO CSRTP-2006 meetings and analysis of Tehachapi and LEAPS projects.
- Continued stakeholder discussions on RPS issues affecting Tehachapi and Imperial development, including cost recovery, RECs, and coordinating procurement with transmission development.
- Continued stakeholder discussions of the phasing of and schedule for Tehachapi upgrades for recommendation to the California ISO Board of Governors.
- Continued work with the California ISO and other stakeholders to explore a renewable energy trunk line tariff amendment filing by the California ISO.

49 California Independent System Operator, August 3, 2006.

- Monitored IID, SDG&E, and LADWP transmission development activities that could affect export of renewables from the Imperial Valley and/or import of renewables into LADWP service territory.
- Monitored regional transmission planning initiatives that could affect California RPS implementation.
- Attended the September 21, 2006, STEP meeting.
- Participated in a meeting of the CPUC and the California ISO on Tehachapi issues.

November 2006

- Prepared for and participated in the California ISO CSRTP-2006 meeting (November 13, 2006) to help prepare the Tehachapi recommendation to the California ISO Board of Governors of Governors.
- Continued stakeholder discussions on RPS issues affecting Tehachapi and Imperial development, including cost recovery, RECs, and coordinating procurement with transmission development.
- Continued stakeholder discussions of, and worked to achieve stakeholder consensus on the phasing of, and schedule for Tehachapi upgrades for recommendation to the California ISO board.
- Prepared a presentation to the California ISO Board of Governors on the Tehachapi project, which was originally scheduled for the December meeting. Continued work with the California ISO and other stakeholders to explore a renewable energy trunk line tariff amendment filing by the California ISO.
- Monitored IID, SDG&E, and LADWP transmission development activities that affect export of renewables from the Imperial Valley and/or import of renewables into LADWP service territory.
- Monitored regional transmission planning initiatives that could affect California RPS implementation.
- Attended the November 21, 2006, CPUC Tehachapi Project Manager's workshop on Tehachapi issues.
- Attend the STEP meeting on November 17, 2006.
- Continued to support SDG&E, IID, and other parties to study alternatives for the SunPath line that do not go through Anza Borrego State Park.
- Assisted the California ISO in explaining the Tehachapi project to local Kern County environmental groups.

December 2006

- Assisted California ISO staff to prepare the Tehachapi recommendation to the California ISO Board of Governors and worked with stakeholders to ensure their support for the recommendation.
- Continued stakeholder discussions on RPS issues affecting Tehachapi and Imperial development, including Long-Term Procurement Plans, RECs, and coordinating procurement with transmission development.
- Continued work with the California ISO to support the California ISO's filing at FERC of a Petition for a Declaratory Order addressing treatment of renewable energy trunk lines.
- Monitored IID, SDG&E, and LADWP transmission development activities that affect export of renewables from the Imperial Valley and/or import of renewables into LADWP service territory.
- Monitored regional transmission planning initiatives that could affect California RPS implementation.
- Prepared and coordinated IOU and stakeholder presentations on the Tehachapi plan of service to the California Wind Energy Collaborative Forum on December 12, 2006.
- Continued to support the California ISO, SDG&E, IID, and other parties to study alternatives for the SunPath line that do not go through Anza Borrego State Park.

January 2007

- Gave a presentation to the California ISO Board of Governors of Governors meeting in support of the staff recommendation to approve the Tehachapi Transmission Project (Appendix W).
- Continued stakeholder discussions on RPS issues affecting Tehachapi and Imperial development, including Long-Term Procurement Plans, RECs, and coordinating procurement with transmission development.
- Continued work with the California ISO to support its filing on January 25, 2007, at FERC of a Petition for a Declaratory Order addressing treatment of renewable energy trunk lines.
- Monitored IID, SDG&E, and LADWP transmission development activities that affect export of renewables from the Imperial Valley and/or import of renewables into LADWP service territory.
- Monitored regional transmission planning initiatives that could affect California RPS implementation.
- Continued to support the California ISO, SDG&E, IID, and other parties to study alternatives for the SunPath line that do not go through Anza Borrego State Park.

February 2007

- Began work on the draft final report for this contract.
- Reviewed utility long-term procurement plans and discussed ways to better coordinate procurement with transmission development with stakeholders.
- Engaged stakeholders to file comments in support of the California ISO's filing at FERC of a Petition for a Declaratory Order addressing treatment of renewable energy trunk lines.
- Monitored IID, SDG&E, and LADWP transmission development activities that affect export of renewables from the Imperial Valley and/or import of renewables into LADWP service territory.
- Monitored regional transmission planning initiatives that could affect California RPS implementation.
- Continued to support the California ISO, SDG&E, IID, and other parties to study alternatives for the SunPath line that do not go through Anza Borrego State Park.
- Reviewed the California ISO 2006 statewide transmission plan (released January 2007) to ensure sufficient transmission for meeting state renewable energy goals is included.

March 2007

- Continued work on the draft final report for this contract.
- Continued work on the California RPS Permit Streamlining Report (Appendix AA), the California RPS Purchase of Renewable Energy Report (Appendix BB), and the California RPS Proactive Transmission Report (Appendix CC).
- Discussed options for accelerating Tehachapi transmission permit applications and construction schedules with the Tehachapi project manager.
- Monitored regional transmission planning initiatives that could affect California RPS implementation.
- Monitored IID, SDG&E, and LADWP transmission development activities that affect export of renewables from the Imperial Valley and/or import of renewables into LADWP service territory.
- Continued to support the California ISO, SDG&E, IID, and other parties to study alternatives for the SunPath line that do not go through Anza Borrego State Park.

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9.0 Glossary

Word	Definition
AB	Assembly Bill
APS	Arizona Public Service
BLM	U.S. Bureau of Land Management
California ISO	California Independent System Operator
CalWEA	California Wind Energy Association
CARB	California Air Resources Board
CEERT	Center for Energy Efficiency and Renewable Technologies
CEQA	California Environmental Quality Act
CFE	Comisión Federal de Electricidad
CPCN	Certificate of Public Convenience and Necessity
CPR	Critical project review
CPUC	California Public Utilities Commission
CSRTP-2006	California Southern Regional Transmission Plan 2006
EA	Environmental assessment
EHV	Extra high voltage
EIR	Environmental impact report
Energy Commission	California Energy Commission
EO	Executive Order
FERC	Federal Energy Regulatory Commission
IEPR	*Integrated Energy Policy Report*
IID	Imperial Irrigation District
IOU	Investor Owned Utility
IV	Imperial Valley
IVIG	Imperial Valley Implementation Group
IVSG	Imperial Valley Study Group
JOA	Joint operating agreement
kV	Kilovolt
LADWP	Los Angeles Department of Water and Power
LCRI	Location Constrained Resource Interconnection
LEAPS	Lake Elsinore Advanced Pump Storage
LSE	Load-serving entity
MOA	Memorandum of agreement
MOU	Memorandum of understanding
MW	Megawatt
MWD	Metropolitan Water District
NEPA	National Environmental Policy Act
PEIR	Programmatic environmental impact report
PG&E	Pacific Gas and Electric Company
PIER	Public Interest Energy Research

POU	Publicly owned utility
PUC	Public Utility Code
PWG	Permitting Working Group
RD&D	Research, development, and demonstration
RPS	Renewables Portfolio Standard
SB	Senate Bill
SCE	Southern California Edison Company
SDG&E	San Diego Gas & Electric Company
STEP	Southwest Transmission Expansion Plan
TCSG	Tehachapi Collaborative Study Group
TRCR	Transmission Ranking Cost Report
TRTP	Tehachapi Renewable Transmission Project
TWG	Technical Working Group
Western	Western Area Power Administration

10.0 APPENDICES

A Development Plan for the Phased Expansion of Electric Power Transmission Facilities in the Tehachapi Wind Resource Area: Second Report of the Tehachapi Collaborative Study Group, 5 volumes. Finalized by CPUC Energy Division and forwarded to SCE only for purposes of formal filing and distribution to the Renewable Transmission OII (05-09-005) Service List

B Development Plan for the Phased Expansion of Electric Power Transmission Facilities in the Tehachapi Wind Resource Area: Second Report of the Tehachapi Collaborative Study Group. Re-circulated with minor edits, but with unchanged cover date of April 19, 2006

C Development Plan for the Phased Expansion of the Transmission to Access Renewable Resources in the Imperial Valley

C–V. 1 Imperial Valley Study Group, Appendix A, Transmission Planning Studies Vol. 1: Regional Flow Table, Dispatch Schedule, Contingency List, Heavy Power Flow Data

C–V. 2 Imperial Valley Study Group, Appendix B, Transmission Planning Studies Vol. 2: Light Autumn Power Flow Data

C–V. 3 Imperial Valley Study Group, Appendix C, Transmission Planning Studies Vol. 3: Stability Data

C–V. 4 Imperial Valley Study Group, Appendix D, Transmission Planning Studies Vol. 4: Post-Transient Data, Production Simulations

D Continuation of Tehachapi Collaborative Study

E Transmission Permit Streamlining—A Project Management Approach

F Establish the Imperial Valley Implementation Group Report

G Imperial Valley Regional Network Upgrade Report

H Report of Completion and Transmittal of Deliverables

I Imperial Valley Production Stimulation Study Report

J Imperial Valley Dynamic Analysis Study

K Establish the Tehachapi Implementation Group

L Tehachapi Collaborative Study Group: Cost Production Study Analysis

M Tehachapi Collaborative Study Group: Component and Total Costs of Transmission Alternatives

N Operations Analysis of 4000MWs of Wind Generation in the Tehachapi Area

O Comparison of the Effects on the Transfer Capability of Path 26 of Alternatives S1 and 2

P Transmission Options for Tehachapi Wind Power

Q Draft Workshop Agenda and Background Paper: Priority Issues for 2006 & 2007 Regarding Transmission for Renewables

R Total Tehachapi Transmission Cost

S Midway—Tehachapi Cost Estimate Report

T CAISO South Regional Transmission Plan for 2006: RPS Benefit Methodology

U Imperial Resource Potential

V CAISO South Regional Transmission Plan for 2006: Status Briefing for STEP

W Tehachapi Workshop Presentation

X CAISO South Regional Transmission Plan for 2006 (CSRTP-2006) PART II: Findings and Recommendation on the Tehachapi Transmission Project

Y Path 26—Comparison of Alternative Tehachapi Connections on PG&E and SCE Imports and Exports

Z Energy Choices: Non-fossil vs. Fossil

AA California RPS Permit Streamlining Report

BB California RPS Purchase of Renewable Energy Report

CC California RPS Proactive Transmission Development Report

These appendices are available as a single separate volume, publication number CEC-500-2011-012AP.